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ABSTRACT

This publication is devoted to distance education. "The Future of Distance Teaching Universities in a Worldwide Perspectives" (John S. Daniel) examines challenges likely to face the various countries and regions of the world in the next decade. "An Australian University's Approach to Distance Education--Formal and Non-Formal" (Peter M. Grayson) describes the transformation of the University of Queensland's provision for distance education. "Open Learning System for Hong Kong, Problems and Possibilities" (Charles Wong) focuses on cost effectiveness, resources, and options (target population, free-standing versus being attached to an existing institution, teaching methods). "Korean Distance Learning System and Structure" (Synghan H. Kim) explains the operations of Korea's well-established system of distance learning, which includes a Correspondence High School, Korean Correspondence University, and Open Colleges of Engineering. "The Television Broadcasting University of China" (Tong Li) discusses course, target groups, students, and program production. A brief description follows of the Open College of the University of East Asia, Macau. "An Off-Campus Programme in Malaysia" (Datuk Musa Mohammed) describes the program and its problems. "A Comparative Study of Distance Teaching in Papua New Guinea and Kenya" (G. S. Kanley) concludes that distance teaching is a cheap method of inservice teacher training and can improve standards of teaching. "Communication Satellites and Tertiary Education" (James C. Lange) considers local, regional, national and international applications of new technology to improve research, teaching, and administration in higher education. (YLB)

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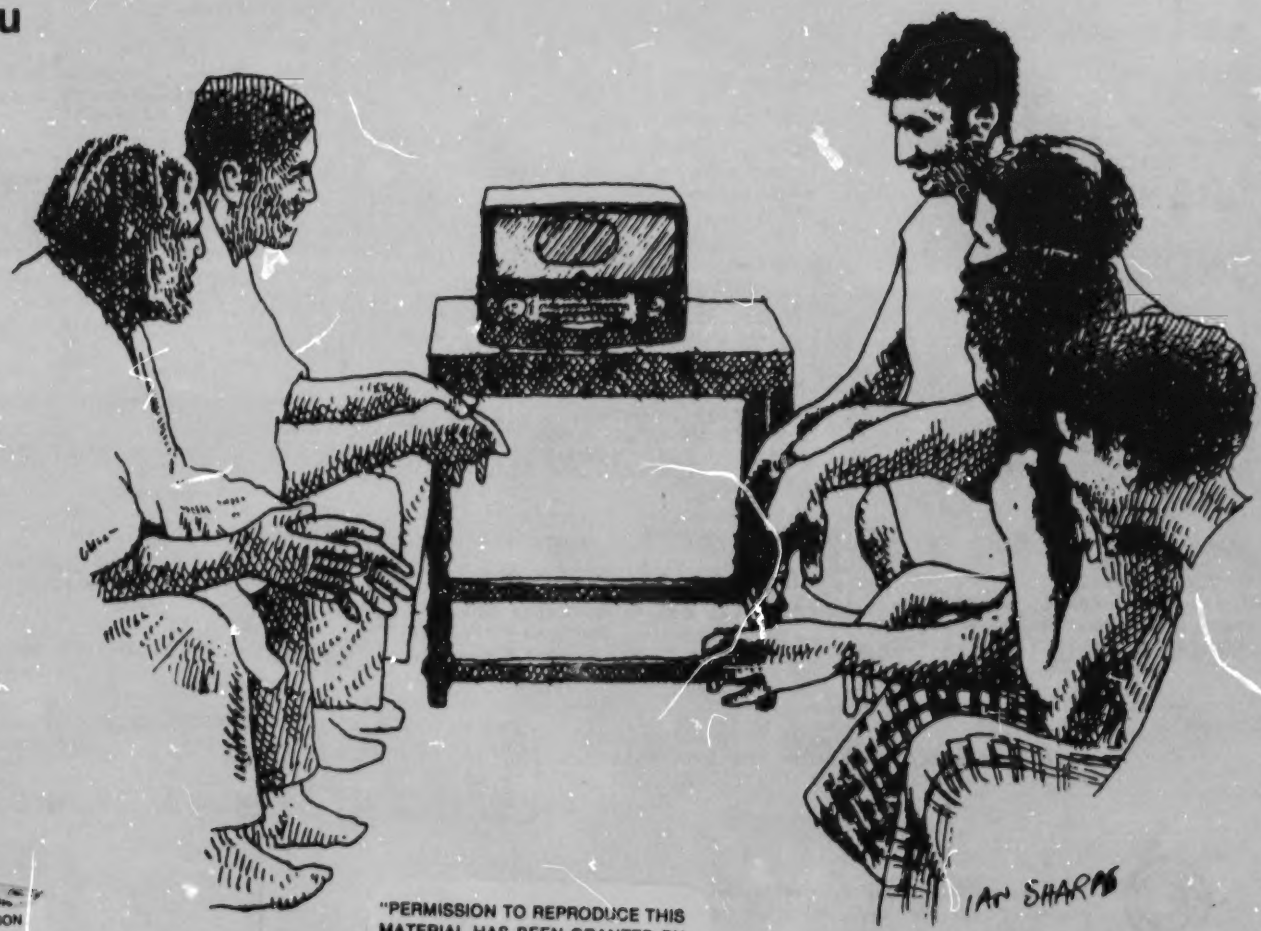
# DISTANCE EDUCATION

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# asian-south pacific bureau of adult education

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**SECRETARIAT**

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Australian National University

**ASPBAE COURIER**

Editor: Ms Yvonne Heslop

Editorial Board: Dr Chris Duke
Ms Wendy Benson
Dr Liz Sommerlad
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EDITORIAL

This issue of ASPBAE Courier (No. 30) is devoted to Distance Education. Distance Education (or Correspondence Education as it was formerly called) is becoming increasingly important in this region.

ASPBAE assisted a seminar on Distance Education in Hong Kong in October 1983 at which a Distance Education Council for Asia was formed.

One of the speakers at the seminar was John S. Daniel, President of the International Council for Distance Education. His paper provided an overview of Distance Education and is included in this issue.

Two articles come from Australia, a country which can benefit from 'distance education' because of its sparse population. The University of Queensland is exploring this area and Dr James Lange has been seconded to the University of Western Australia to look mainly at the use of satellites for tertiary distance education. Australia will join other countries in the region with a domestic satellite in 1985 and tertiary and adult educators are actively exploring ways of utilising the satellite when it is operating. India already has a great deal of experience with the educational use of satellites through its INSAT. (See Courier No. 25 (News) July 1982).

Charles Wong discusses an Open Learning System for Hong Kong in his article and Desmond Lee, Chairman of the Hong Kong Association for Continuing Education, also addresses this question in his News item (see News section).

Korea has a well-established system of distance learning which includes a Correspondence High School, Korean Correspondence University and Open Colleges of Engineering. The operations of these units are explained in some detail in Dr Synghan Kim's paper, presented at the DECASIA seminar in Hong Kong.

China has had a Television University since 1960 which was one of the earliest in the region. It was reopened around 1979 and is called the Central Television University. The central body is situated in Beijing and there are 28 provincial television universities covering most of the country. The Central Television University is run by the Ministries of Education and Broadcasting and the provincial organisations are run by local education authorities. The courses, target groups, students and program production are discussed in a paper by Mr Tong Li of the Department of Adult Education in the Ministry of Education.

The Open College of the University of East Asia opened in Macau in 1983. By the end of the year it had approximately 2,000 students and early indications are that it is well suited to requirements of students in the region.



The Universiti Sains Malaysia in Penang has been running a successful off-campus program since 1971 and following a review in 1981 was directed to expand its student intake from 2.4% to 5% of students per academic year. The Director of the Off-Campus Studies Unit, Dr Dhanarajan, is also the Secretary-General of the Distance Education Council for Asia.

G.S. Kaeley of the University of Papua New Guinea has done a comparative study of distance teaching in Papua New Guinea and Kenya. Mr Kaeley has worked in both countries in recent years and is well placed to compare the two systems. He concludes that distance teaching methods can provide a wider and cheaper method of in-service training of teachers and can assist in improving the standards of teaching in many subjects, particularly science and mathematics.

Another significant distance education institution in our region is the Sukhothai Thammathirat Open University in Thailand. STOU was established by Royal Charter in 1978 and was the first open university in Southeast Asia to use distance teaching to extend higher education to the people. The University awarded its first degrees to approximately 9,000 graduates in 1983. The Learning Exchange Section of this Courier has more information about the STOU.

Distance Education at present is concerned more with the formal system than the non-formal but it is important in providing access to higher education to many people, mainly adults, who would otherwise be denied such learning. It also has an important role to play in professional up-dating and in-service training and has a potential for non-formal education with the proliferation of domestic satellites in our region.

(Yvonne Heslop)
March, 1984

# THE FUTURE OF DISTANCE TEACHING UNIVERSITIES IN A WORLDWIDE PERSPECTIVE

John S. Daniel
Vice-Rector, Concordia University, Montreal
and
President, International Council for Distance Education

## INTRODUCTION AND SCOPE

You have asked me to discuss the future of distance teaching universities in a worldwide perspective. I shall begin, therefore, by an examination of the challenges likely to face the various countries and regions of the world in the next decade. Any such review can, of course, only be speculative but such speculations are particularly important for a discussion of the future of distance universities. In the last decade many governments have come to see distance teaching as a flexible and cost-effective response to new educational needs. Responding to agreed national priorities is the surest way of winning government support and the most successful distance teaching universities have been those, such as the UK Open University, that have enjoyed the strongest political backing. It is important, therefore, to assess whether distance education is relevant to the special challenges countries are likely to encounter in the eighties and nineties.

In making this assessment I shall look briefly at the developments to be expected in conventional universities over the same period that will influence their response to the same challenges.

Most distance teaching universities were created in the 1970s. What problems will they encounter as they lose the protection of newness and approach something like a steady state? These will be examined in the second part of the paper. I shall then look at the relative success of the various organizational models under which distance education operates at the post-secondary level. My purpose will be to identify those organizational features which appear to promote effectiveness and longevity. A final section will examine the leadership requirements of the distance teaching universities on the assumption that they will have to face much tougher competition from the conventional universities in their jurisdictions.



## The Ups and Downs of Human Capital Theory

The human capital theory holds that investment in the education and training of people is a sure route to national economic prosperity. This theory inspired the rapid expansion of educational opportunity from 1960 onward both in developed countries and newly independent nations. This was the sign of the politico-economic zodiac under which the distance teaching universities were born. Looking back from the 1980s after an unpleasant recession it is now clear that a reliable recipe for economic development calls for many ingredients, of which education is not necessarily the most important. Furthermore, comparisons of the economic hares and tortoises, from Taiwan to Uruguay, now suggest that small and non-interventionist governments may have the greatest economic virtue. Small wonder that the distance teaching universities, which were created in an era of enthusiasm for public spending on education, now feel more exposed to the current political draughts than older, conventional institutions. Closer examination of the situation will show, however, that those distance teaching universities (DTUs) which are already operational should have little to fear if they can remain attuned to the educational needs perceived by their governments.

## Challenges of the Future: A World Tour

In the 24 developed countries of the OECD the primary priority is now to reduce unemployment, particularly among the young. Many governments believe that one route to this objective lies through improved training, particularly as it relates to all aspects of the new wave of information technologies. Governments are not pleased at this prospect ("How come we have a training problem after all our investment in education?") and are likely to be fairly hard-nosed in reallocating resources within their educational systems away from general support to universities and towards career-related programmes below university level.

The Soviet bloc suffers from full underemployment rather than unemployment. However, the route to increased productivity and prosperity would appear to lie in a reform of the economic system and reduced emphasis on military spending rather than in educational reforms. From the current western perspective the Soviet bloc has an enviable tradition of linking study and productive work. Rumble and Harry (1982:21) note that in 1979 2.2 million people, or 40% of Soviet university enrolments, were studying either at a distance or in the evening. The USSR's fourteen DTUs and the many distance programmes in conventional institutions have a mainline role in the educational system that is matched nowhere else.

China also has a long tradition of correspondence education and the Beijing Television College, founded in 1960, was one of the earliest DTUs. However, it was closed down along with the rest of China's postsecondary education system, by the Cultural Revolution. China's declared priority is a massive program of modernisation and catching up in all fields. The Central China Television University (CCTU), which began in 1977 with courses in English, electric circuits and mathematics, now prepares courses for some 500,000 students who are supervised by the 28 Local Television Universities (such as the Beijing Television College). While these numbers make the CCTU the world's largest DTU it is hardly scratching the surface in relation to the needs of China's one billion people - who include a lost generation of potential university graduates. For the present the CCTU can accept only full-time students living in urban centres. Naturally it is under pressure to expand capacity in order to serve rural regions and part-time students. Without underestimating the problems of operating, let alone expanding, such a vast system, it does seem that distance will play an important part in the modernization of China if, for the rest of the century, the country is spared any major internal or external upheavals.

After making far more than its share of the headlines of war for the last 40 years eastern Asia may indeed be entering an era of peace. If so the Pacific Rim will likely continue to set the pace of economic development for the rest of the world and will be the most exciting region for the development of distance education. The Japan University of the Air, founded in 1981 after fourteen years of planning, the Sukhothai Thammathirat Open University of Thailand (already one of the world's largest and most successful DTU's,, and the new Hong Kong Open College of the University of East Asia all seem destined to make major contributions to the expansion of opportunities for postsecondary education, particularly in applied disciplines.

In South Asia and the South Pacific the tradition of distance education is longer, leaving less room for development and growth in the future. The University of the South Pacific (USP) will no doubt continue its remarkable work of teaching an ethnically diverse and highly scattered population through a second language (English). USP is highly dependent on satellite communications and could gain greatly if these facilities were improved.

Bearing in mind its small population Australia must have the greatest diversity of distance education providers in the world. There are no autonomous DTUs, however, for Australia has preferred to organize distance education from five of its conventional universities and from a large number of other post-





secondary institutions. Despite the achievements of this "two-mode" tradition many observers believe that the Australian distance education pie is now sliced too finely. The problem is less one of duplication in the courses actually offered than of the absence of programs in many important work-related fields since no single institution can achieve, in its own catchment area, the critical mass of enrolments necessary. Australia formally decided some years ago not to establish a national DTU. However, the publication in 1983 of the Johnson Report on External Studies does seem likely to produce better coordination and cooperation between those institutions now active.

India shares some of Australia's problems. Again, there are no DTUs but some 18 universities have correspondence programs that between them reach nearly half a million students. Each program is, however, distinctly the poor relation within its institution and few courses are available in science and technology. Pleas from Singh (1982:63) and others to establish a central institute to give higher priority to distance education shows no signs of being acted upon.

Pakistan, by contrast, created a DTU in 1975 (Allama Iqbal Open University) that has been rather successful. As well as reaching over 200,000 students it has managed to concentrate on subjects of national importance (teacher training, farming, home economics) instead of reproducing the traditional 'colonial' curriculum.

Since the closure of the Free University of Iran by the Khomeini regime there have been no DTUs in the Arab world although the UNRAW/Unesco Institute of Education reaches widely scattered Palestinian teachers (Nashif 1982:241). There has been some talk of a Gulf States Open University. Given the importance of face-to-face communication in Arab culture and the availability of oil revenues to build conventional institutions there seems little reason to develop distance education in this region at present.

Africa stands at the opposite extreme. It is inconceivable that resources will allow the conventional educational system to be expanded to meet demand in the foreseeable future. For most of black Africa increased educational opportunity and a better, work-related curriculum, can only be achieved through distance teaching. Given the immense needs, however, university level work is hardly a priority. African countries should concentrate on facilitating the provision of secondary and vocational education at a distance using both state and private institutions. The universities can play a useful supporting role at this level (e.g. the University of Nairobi's involve-

ment in programs for high school drop-outs; the University of Zimbabwe's ZIMSCI project for secondary-level science). For the moment distance education at the university level can be provided by the one existing DTU (the University of South Africa founded in 1954 and now enrolling 56,000 students) and by special units within conventional universities on the Australian two-mode model.

The scene in Latin America has been well summarized by Escotet (1983:141) whose title, Adverse factors in the development of an open university in Latin America, gives the flavour of his conclusions. Anderson (1982:70) compares distance education in this region to "grassfires on the savannahs or llanos", emphasizing that projects have been many but short-lived. Commercial and vocational courses have had the best survival rate since the organizational volatility that goes with the highly politicized nature of Latin American Universities is antithetical to the administrative stability distance education requires. However, Latin American universities have made laudable attempts to offer through distance education the professional programs students actually want rather than the liberal arts courses that are easier to mount. Furthermore the region's two autonomous DTUs, the Universidad Estatal a Distancia in Costa Rica and the Universidad Nacional Abierta in Venezuala, have made good progress so far according to Rumble and Harry (1982:72, 187).

Even this highly abbreviated analysis of the challenges of world development reveals a bedrock made up of three common trends beneath the regional differences. First there is a continuing problem of access to postsecondary education, particularly for those in rural areas and those who are employed. Second there is the challenge of rattrapage for adults who missed a first chance at education or who require new skills and knowledge to cope with a changing environment. Finally there is the need to teach new subjects - computing is an obvious example - to huge numbers of people.

Simply enumerating these challenges reveals the important future of distance education. It is above all a flexible form of learning which enables people to overcome constrains of geography and schedule through study at home. It is a means of reaching large numbers of learners rapidly and has proved particularly appropriate for teaching electronics and computing where the experimental equipment required is inexpensive and easily transportable.

## Competing with conventional universities: a Sailing Ship effect?

Steamships took much longer than nineteenth century observers expected to oust sailing ships from the world's trade routes.



To meet the new competition sailing ship operators greatly increased their efficiency (e.g. faster ships, published timetables) and retained much of their business until finally overhauled by the continuing development of steam vessels.

Distance education will never and should never displace face-to-face contact in classrooms as the primary means of teaching and learning. Nevertheless it has become in many countries the major element of the response to the increased demand for part-time higher education - partly because conventional universities have neglected to adapt their offerings to part-time students. We may now see a 'sailing ship effect' as conventional universities become much more adaptive in response to the crisis they now face. Keller (1983:12) has described this crisis for American universities and many of its elements, given in the following list, are of concern worldwide.

1. A changing student clientele. (Fewer younger and more older students; a more heterogeneous ethnic mix; by 1990 a majority of students learning part-time).

2. A disintegrating curriculum. ("The rationale for general education has become enfeebled and the intellectual structure has lost its coherence" (Daniel Bell); students concerned with economic returns; the growth of knowledge.

3. Increased competition within higher education. (Estimates of 13 million students in formal U.S. higher education and 17 million in the "third sector" outside colleges and universities; competition for students; raiding of faculty).

4. The technological imperative. (Effect of computers on libraries and learning; growing expense of research equipment; distance education).

5. Trends in the faculty. (Aging - 52% over 55 by the year 2000?; two-tier salary scales to reflect merit and discipline; dominance of institutional needs of faculty preferences).

6. The tightening grip of outside controls. ("The ivory tower of yore is becoming a regulated public utility" (Clark Kerr)).

The crisis, according to Keller, is about to produce a dramatic change in the management of conventional higher education. University presidents, instead of being the

dignified caretakers, cordial hangers-on or fretting pessimists of recent tradition, will have to recognize that they are executives of sizable organizations which require active management, strategic choices and frequent change to stay abreast.

Some major changes are already well under way. While "the best universities especially continue to abhor part-time students, and some are almost cruel toward them" (Keller, 1983: 14) most North-American institutions are trying to integrate their full-time and part-time offerings (Daniel, 1982:187).

Conventional universities are a tremendous repository of human talent and intellectual horsepower. If they do indeed abandon the "Brownian motion" model of administrative behaviour and begin to show a sense of institutional purpose, other actors on the higher educational scene, including the distance teaching universities, will face more serious competition.

The DTUs, which inevitably operate with a lighter intellectual superstructure, will face this competition at a time when it is becoming more difficult for them to camouflage their shortcomings and contradictions behind the aura of novelty. Conversely, where conventional universities do succeed in attracting students from the DTUs, they may find these independent learners pose an implicit challenge to the style and authority of classroom teachers.

## When Distance Teaching Universities are no longer novel...

The distance teaching universities have made a substantial impact on their countries' educational systems in a short time. Never before have universities grown so big, so fast. Two years after admitting its first students the Open University became Britain's biggest university and it has attracted half a million applicants (1% of the population of the United Kingdom) in its first decade (Rumble and Harry, 1982:174). In their early years the DTUs set such a breathless pace of growth that they were readily forgiven occasional weaknesses in performance, especially since they could fairly claim to be designed as inherently self-improving systems.

Although the University of South Africa and some of the Soviet DTUs go back thirty years or more most of the world's DTUs, like UNED, are barely into their second decade of existence. What will be the persistent issues facing institutions as the novelty of university distance education wears off and weaknesses can no longer be ascribed to teething troubles?



## Drop-outs

To begin with, DTUs will have to learn to live with and justify their drop-out rates, whether high or low. In the early years it was possible to hold out the promise of future improvements to the teaching system that would dramatically improve retention but as the years go by drop-out rates will tend to stabilise, seemingly at very different levels from one institution to another. By 1982 56% of the UK Open University's first cohort of 1971 had obtained degrees (Rumble and Harry, 1982: 229), a remarkable achievement given the length of the program (the equivalent of 3 - 4 years of full-time study) and the motivation required to study at home year after year. By contrast the Universidad Nacional Abierta in Venezuela has drop-out rates of nearly 80% between its early courses. The Fernuniversitat of West Germany lies somewhere in between. In fact none of the new DTUs created in the 1970s has been operating long enough to have awarded substantial numbers of degrees - with the notable exception of the 60,000 graduates of the Open University. As institutions approach more of a steady state patterns will become clearer. The drop-out phenomenon is complex, as Shale (1982:113) and others have pointed out. Furthermore there are few data on drop-out and stop-out rates for comparable part-time adult students in conventional universities. Context is important too. The Open University operates in Britain where few students drop out of the almost exclusively full-time programs in conventional universities. In Latin America, by contrast, higher education operates more in the tradition of social Darwinism and drop-out rates are high in all institutions. During the 1980s each DTU will need to come to terms in a frank manner with both its philosophy and its performance regarding drop-outs and the relative importance it attaches to students completing whole programs rather than just individual courses. Drop-out is affected by extrinsic factors (such as the selection of students and even the definition of an enrolment) and by factors intrinsic to the teaching system (such as the degree of pacing, assignment frequency and turn-around, and tutorial support). The most cohesive systems have the lowest drop-out rates. However, any determined drive to reduce drop-out rates usually implies both philosophical and financial choices and the institution should be clear about its rationale for making them.

## Media

DTUs will also be less able to shelter behind ambiguity in their use of media. A commitment to the use of media, particularly TV, accompanied the establishment of many DTUs and did much to create the impression of an exciting new wave of distance education that broke with the dull old tradition of correspondence courses. When Bates (1982:8) reviewed the use of media and broadcasting in DTUs and other distance education projects in 12 countries he found that 'television and radio in

particular are proving to be of less significance in teaching systems or more difficult to use successfully than was originally expected.' On the other hand he found unexpected media successes: 'the greatest media development during (the Open University's) 23 years of existence has been the humble audio cassette.

Of course those charged with operating DTUs were never as sanguine about the use of media as the communications lobbyists. There is firstly a defensible position that, no matter what media may become available, the very essence of higher education is the manipulation of symbols among which the written word has pride of place. Secondly, new media are singularly unsuited to DTUs which must, according to Perry (1976), make use of existing communications networks that link to equipment which most students already own. Few DTUs were able to access radio and TV networks with coverages comparable to that available to the Open University throughout the BBC. Furthermore the equipment available in homes varies greatly around the world. Not until fairly recently could DTUs, even in developed countries, assume that every student would have an audio cassette player. Despite the current enthusiasm it will be years before microcomputers and video cassette recorders are found in most homes.

DTUs should not renege on their commitment to use modern communications technology in their teaching systems. Even after the extrinsic factors outlined above have been taken into account Bates (1982:10) concludes that academic distrust is the main reason for the hesitant approach of the DTUs to audio-visual media. This problem must be faced. It is not wrong to base a DTU exclusively on correspondence teaching but it is wrong to camouflage the fact with institutional literature that suggests a multi-media system involving broadcasting, telephones and personal computers. DTUs should be preparing carefully to match their offerings to the home media environment of the twenty-first century while operating their existing media as effectively as possible.

## Standards and Status

Nothing is as important to students as the recognition of their credits or degrees by employers and other institutions. Given the conservatism of the academic world the DTUs have done a good job in gaining recognition for the quality of their courses. This is not simply a matter of having standards that are as high or higher than those elsewhere, but also of reminding people of the fact. As the number of DTU graduates will now start to grow sharply institutions should take special pains to publicize their achievements.



## Costs

"Perhaps even the present limited research on cost-effectiveness (of DTUs) will have more implications for higher education than has yet been realised". This is how Sewart (Sewart, Keegan and Holmberg, 1983:373) introduces the contributions of Wagners, Snowden and Daniel, and Rumble in the reader Distance Education: International Perspectives. In the heyday of human capital theory the cost of distance education was of less concern than its potential for augmenting access quickly. Now the situation is reversed and the low cost of teaching at a distance, especially the very low variable costs per student, is highly attractive to hard-pressed governments. The economic analyses performed in DTUs to date have shown that the key cost variables are the number of courses on offer and the average course lifetime, the number of students per course, and the richness of the media mix. Since the impact of increasing interactive activities (tutorials, etc.) appears almost entirely in the variable costs this is a particular constraint.

Maintaining and improving cost-effectiveness will be an important concern for the DTUs as they lose the protection of novelty. Economic analyses can be helpful to DTU administrators provided they treat the results as an aid to financial management, not a substitute for it.

## The Organization of University Distance Education

The UNED is an autonomous university which was created expressly for distance teaching. Much of this paper, and recent literature, has been concerned with similar DTUs in many countries. However, even when all the students of all the DTUs are added together they do not constitute the majority of the students doing university-level work at a distance around the world. Most distance students belong to universities or other postsecondary institutions that offer both on-campus and home-study programs (two-mode institutions). What are the relative merits of the single-mode and two-mode forms of organization?

Perry (1976) argues strongly that a distance teaching university cannot flourish without a high degree of autonomy. The experience of the University of Mid-America which closed in 1982 (McNeil and Wall, 1983:34) and the crisis-ridden history of the Télé-université (Daniel and Smith, 1979:65) would appear to support his conclusion. However Kay and Rumble (1981:274), motivated no doubt by the thought that few additional autonomous DTUs are likely to be created in this century, argue the advantages of both the two-mode approach and collaborative networks. For collaborative ventures, even more than for autonomous DTUs, success seems to depend greatly on context.

The Norsk Fjernundervisning (NFU), which was created by the Norwegian parliament in 1977 as a kind of switchboard between correspondence schools, the State broadcasting authority, the film board and the voluntary sector, does not appear to have had much impact to date. On the other hand the U.S. National University Consortium (recently renamed, since Canada has become involved, the International University Consortium for Telecommunications in Learning) seems set to achieve significant success. According to the New York Times the Consortium, "a more modest form of open university, is doing well...because it is committed to a slow and cost-effective build-up, tight quality control and a partnership with the existing world of academe". The Consortium makes available a complete undergraduate curriculum, much of it based on British Open University materials. Its eighteen member institutions (May, 1983) use their local Public Broadcasting System stations to air the TV component of the courses.

From these and other successes and failures in distance education it does appear that two components of autonomy are particularly important, a direct relationship with the students and a direct (and predictable) relationship between students and institutional income. Two important handicaps for the University of Mid-America were its reliance on 'soft' money from the federal government and the enrolment of the students taking UMA courses at associated institutions rather than directly at UMA. The National University Consortium also has this enrolment handicap since students enrol with member institutions, but it is greatly mitigated by the fact that the Consortium will be supported by contributions from the member institutions made up of a flat membership fee plus a per capita fee for each student.

These same criteria of direct links between students, institutional income and the distance education program also influence the success of two-mode arrangements. While the parent institution may insist that the distance students subsidize the on-campus programs to some extent - just as one faculty indirectly subsidizes another in many universities - the distance program will not remain healthy unless success in increasing student numbers produces benefits for the program itself.

## Leadership

Many DTUs were fortunate in attracting leaders of exceptional quality as their founding presidents. The specific leadership requirements of such institutions have been explored by Daniel and Smith (1979:71) and Snowden and Daniel (1980:88). They suggest that DTUs require leaders with a deep concern for both production and people who are proficient in both of the two key dimensions of leadership, 'initiating structure' and 'consideration' (sometimes abbreviated as autocracy and democracy). Since the first generation of DTU leaders had to be hard-driving entrepreneurs who could communicate excitement and release energy in other people the institutions may seek more staid individuals for the second generation of executives. At a time when, according to Keller (1983:171) conventional universities are moving to a more active style of leadership it will be important that the DTUs also be led by strategists who can define intelligent goals and guide their institutions towards them. Despite their substantial achievements to date the future success of the distance teaching universities will continue to depend on skilled and dedicated management.

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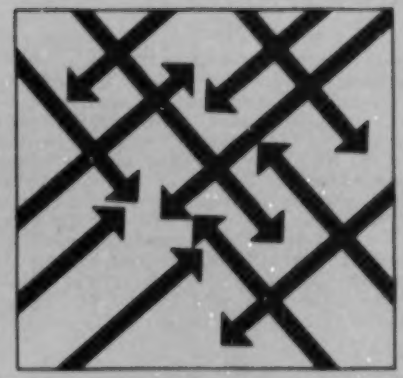

# AN AUSTRALIAN UNIVERSITY'S APPROACH TO DISTANCE EDUCATION - FORMAL AND NON-FORMAL

Peter M. Grayson
Co-ordinator of Continuing Studies
School of External Studies and Continuing Education
University of Queensland

## THE BACKDROP

More than 70 years ago three teachers enrolled in a degree course at the University of Queensland which provided for them to undertake their study without attending classes at the University. When teaching began in the fledgling university in March 1911 there were 83 students enrolled, three of whom were enrolled in correspondence courses. The Act establishing the University stated -

> "Instruction shall be given by means of correspondence tuition, local tutors, vacation schools or otherwise in such of the courses of study as... can properly be pursued by students unable to attend classes at the University."

It was thought that the need for such courses would disappear. On the contrary, the University now teaches 3000 students in this way and nationally the number of external students (as they are called in Australia) has reached 40,000.

This figure of 40,000 can be expected to increase quite rapidly in the future, as contrary to the predictions of politicians it is unlikely that this country will ever return to the position of 'full employment', the notion that all who wish to may obtain paid work. The tendency toward shorter working time continues with the permanent loss of job vacancies and, correspondingly, the amount of non-work time in society has increased because of sustained high unemployment levels. In such a situation it is reasonable to anticipate that this availability of time, combined with social and technological changes, will bring more and more people back to some form of study, either to effect some improvement in career prospects or to attain new skills for living.

For most of them the distance education mode will be either the only one, or the most convenient one.



It can also be anticipated that there will be changes in the pattern of demand. The effects of this are likely to have an impact at two levels; the profile of the student group will be altered and the motivations of these people in enrolling for a course may vary from those which have underpinned course offerings to date.

The most obvious signal of this development for the University of Queensland occurred with the dramatic cutback in teacher training intakes in the last half of the decade of the 1970s. The decline in the numbers of school-age children created a seemingly unforeseeable oversupply of teachers and as a result enrolments into educational faculties were then substantially reduced. A similar occurrence of oversupply has now hit almost all professional groups, including the unimaginable ones such as the medical profession. Until recently most external students were teachers, nurses or technicians seeking professional qualifications.

The expectation now is that many more people will be motivated by non-vocational reasons to enrol in courses which are available for study in their home or workplace, and in their own time. These people will be preparing the general ground for future changes of employment, seeking mental challenge as a compensation to a routine job, keeping their minds active during retirement or long periods of unemployment, or merely studying for the pleasure of it.

There are no available definitive figures for Australia of the proportions of enrolments in degree courses of this non-vocational type but in the Open University in the United Kingdom their proportion is estimated to be very high indeed, possibly as high as 50%(1).

It is against the backdrop of changing statistics and attitudes for teaching and learning at a distance that the University of Queensland began a transformation of its provision in this area.

## DEVELOPMENTS IN DISTANCE EDUCATION 1977-82

In 1977 a University working party submitted a draft report containing recommendations concerning external studies degree teaching; after a lengthy round of discussions with people in the University involved or associated with external teaching a decision was taken that a new report was needed. The problem centre of these discussions was focused on (or confined to) credit teaching but in the ensuing two years a change occurred

which included non-credit provision or continuing education as well.

The essential feature of the overall plan contained in a report presented in 1979 was to combine two existing departments with a newly created Continuing Education Unit into a School of Extra-Mural Studies. The established departments were the Department of External Studies and the Institute of Modern Languages. It was this proposed amalgamation which suggested the initial linking of two elements which hitherto had always been separate parts of the Australian university tradition. The creation of a continuing education unit was merely an extension of the framework to include more than modern language teaching.

In 1979 the fundamental point which was implied but not specifically stated in the report was the necessity for the University to make a decision then on the priority which it was willing to place on the future development of external studies and continuing education.

Professor G.N. Davies, the Deputy Vice-Chancellor who wrote this report outlined the past and present features which provided the imperative for the reconsideration of priorities:

> The University made a firm commitment to external studies at the time of its foundation and such was the success of its innovative programme that it soon attracted favourable attention from educational authorities within Australia and overseas. This recognition was achieved in spite of the limited resources available to it. In recent years the Department has suffered a series of set-backs which have inhibited its ability to provide the sort of service which is essential and of which it is capable.
>
> This detailed enquiry has convinced me that we must now decide whether to provide the Department of External Studies with a new charter and to support it with an appropriate infusion of new blood and additional resources. If this is done I believe this University could become the pacemaker within Australia for future developments in external studies and continuing education. Not to do so would be to condemn the Department to second-rate status. This would be an indefensible position in view of the Department's past performance and current capability and the projections for future developments in these fields.



The Davies Report extended discussions in the University beyond the sphere of external studies per se and into the realms of continuing education and methodological support. The most important recommendation of his Report was certainly that of linking distance teaching with responsibility for the development of a university continuing education program.

In the past the two forms of education were invariably segregated despite the fact that they often attempt to meet similar needs among similar population groups. Only recently have we come to realize that the distinction between credit and non-credit programs is of a limited pedagogical significance and does not call for entirely different methods of teaching.

Once this is recognised, it becomes apparent that many continuing education modules are suitable for independent study and can be packaged for use in this form. Classroom contact is reduced without any loss of quality: in fact the availability of preparatory and follow-up materials may well mean that sessions involving personal interaction become more effective than they would be if mounted in isolation. The advantages are obvious, especially in the area of professional upgrading and updating. Economic, educational and social considerations all argue for the closest possible relationship between learning and work experience, a relationship which is easier to achieve in the context of mixed-mode programs than those which rely entirely upon a single form of teaching.

The Davies Report posed questions for the University of Queensland as to the priority it would accord the expansion and linking of formal and non-formal provision, or external studies and continuing education. However, the revision suggested in 1979 was not formally recognized until January 1983 when a new name appeared in the University Calendar for the year; that of the School of External Studies and Continuing Education.

In the intervening time a new professor had been appointed as the director of the transition. He is now the Director of the new School. As a first step in the shift in direction the new Director completed his own analysis, review and report of what was by this time a very complex situation. This additional report accepted the essential elements of the Davies Report while extending the applications of these elements and flushing out some of the more vague suggestions of the earlier report.

In this respect the principal considerations for the Director were matters of timing and the manner of implementation. He

considered that ideally it should have been possible to institute and consolidate the quite sweeping changes suggested for distance teaching, before venturing into the even more complex field of continuing education. However, he could see that there were a number of reasons why it was not feasible to proceed in this way. An integrated approach to external studies and continuing education, in which the two activities were developed simultaneously and in close conjunction was preferable because to build up one side of the operation in isolation would be to distort the balance of the proposal.

In addition, it was his opinion that other developments within the University were unlikely to await the convenience of the new School. Particularly the creation of a company to handle research and consultancy services could have had important consequences for the non-formal continuing education development. Such a company might simply serve as a contracting agency and a channel for finance; on the other hand, its expertise in these aspects of continuing education could easily be augmented to provide a basis for more extensive involvement. From the University's point of view, he considered that it was more logical to link the co-ordination of continuing education programs with the co-ordination of distance teaching activities, but the main concern was to get the job done quickly and effectively. If External Studies had not been able to offer leadership in the area, it may well have been by-passed altogether.

The Director argued strongly for moving directly to the establishment of a School, as suggested by Davies, and the expeditious creation of a continuing education unit within the new framework. He was cautious at the same time however, and concerned to optimize the opportunity which was available. He said that while it was important to obtain the help of a person who could lay the foundations of a vigorous continuing education unit and establish guidelines for its future development, it would be a mistake to build elaborate institutions in anticipation of the activities for which they are supposed to cater. The area is one in which success would depend upon ensuring that services were closely attuned to the context within which they were offered. Premature decisions about organisational forms could jeopardise the entire operation. Only later need the precise relationships between the various parts of the School be spelt out in the light of operational experience.

In his Report the Director recommended that the University appoint a consultant Co-ordinator of Continuing Education to the School with the following terms of reference:

(a) to advise the Director of the School on strategies for the development of continuing education at the University of Queensland, in accordance with the recommendations of the Davies Report on *The Future of External Studies*;

(b) to initiate and organise such continuing education programs as may be compatible with longer-term strategies proposed under (a) above;

(c) to advise the Director on the managerial forms and procedures most appropriate for the future development of continuing education programs within the framework of the School.

In its contract with the Co-ordinator the University specified that he was "to investigate and report upon the feasibility of co-ordinating continuing education in the University", this report to be received before the completion of the contract in mid-1985. That was in July 1982.

## THE CONTINUING EDUCATION UNIT

A Continuing Education Unit is now established in the University within the framework of the School of External Studies and Continuing Education. The mandate for the Unit is to "facilitate promote and extend" non-credit short courses and other educational activities relevant to graduates and the public. The Unit is staffed by a co-ordinator and an executive assistant.

The Continuing Education Unit is now:

- co-ordinating the publication of the University's Continuing Education Program booklet;
- distributing information about the program in the University to the media and other interested parties;
- providing a focal point for enquiry about the continuing education program;
- developing courses with departments or staff members and other suitably qualified individuals;
- providing advisory and administrative support for course development. Support services include budgetary development, publicity, graphics, word processing, venue booking, travel and accommodation arrangements, and other related requirements;
- arranging for and co-ordinating the visits to Australia of overseas academics on lecture tours;

- providing teleconference facilities and support for course development using this method (including experimental satellite hook-ups from February 1984);

- exploring the link between credit and non-credit courses with some departments looking to gain extra funds from courses which are already being provided as credit courses;

- making continuing education available beyond the campus and the metropolitan area.

Expansion of non-credit programs for the University has been rapid. In the first phase of approximately twelve months the major development tasks related to establishing the infrastructure for continuing education in the University. Detailed discussions with departments and faculties has established several important factors. The acceptance of the validity and purpose of continuing education as a part of the university fabric is more widespread than was anticipated. There is a readiness to accept the function of continuing education as an integral part of departmental activity but this is tempered by an awareness of the limitations to growth and development. The limitations are not entirely financial; there have been common references to the lack of recognition for staff commitments of time and energy to continuing education. The result is that there is an imbalance in the university provision as many departments consider themselves unable to make extra commitments of already strained staff resources.

These discussions also confirmed general acceptance of the 'user pays' principle but that the ultimate effectiveness of any program of continuing education would depend upon the establishment of an appropriate co-ordinating and supportive infrastructure. The need to promote continuing education through the distance education mode was also confirmed.

## THE UNIVERSITY ENVIRONMENT FOR CONTINUING EDUCATION 1983

The principal element in setting the environment for expansion has been the establishment of a development fund:-

> The Continuing Education Development Fund has been established with an allocation of $20,000 from University funds. It is to be used to support experimentation and new developments in continuing education and to underwrite financial loss on courses where this has been agreed in advance. Discretion on the fund is the responsibility of the Director of the School of External Studies and Continuing Education.
>
> The Fund is to be maintained by a 15% contribution from each continuing education course which realizes a profit after the payment of all visible costs.
>
> No overhead charges are to be applied to continuing education revenue nor are administrative charges to be levied for use of the Continuing Education Unit services except where real costs are incurred. Examples of the latter would be the hiring of a temporary typist where an exceptional load was generated by a course, payments for printing or advertising or for artwork.
>
> Each continuing education course will contribute to the Development Fund from its surplus regardless of whether or not it has been organized by or with the assistance of the Continuing Education Unit.
>
> There have been instances where continuing education courses have been run in conjunction with other universities or outside bodies, with agreement to share the financial risk or surplus as the case may be. In this situation, the Development Fund arrangements apply only to the proportion due to this University. Such arrangements need to be identified in the budget submitted for approval.
>
> The 15% contribution to the Development Fund from surpluses is constant. The Continuing Education Unit may also seek agreement with departments for a share of profits where a course involves a heavy commitment of the Unit's resources. This is a matter for negotiation, however, and there is no obligation on a department to organize a course through the Unit.

## PROJECTED DEVELOPMENTS IN NON-FORMAL DISTANCE EDUCATION

In a public statement issued in June 1983 the University acknowledged that at present the overwhelming majority of its non-award courses are held on campus. It went on that it is not projecting exponential growth of its face-to-face teaching effort in continuing education in the short term; rather it is planning to achieve moderate expansion of its program through balanced development of provision through all of its recently established academic groups.

The University intends to pay particular attention to the inter-relationship between distance education and continuing education

and to attempt a significant integration of these modes. In this it highlighted the recent establishment of the School of External Studies and Continuing Education as a first step in this effort.

It went on "We believe that this relationship will become increasingly significant during the next decade when the opportunities offered by the applications of the new communications technology become self-evident. The examination of our continuing education program since the appointment of the Co-ordinator of Continuing Education has suggested that this be listed as a University priority".

The following proposals were listed for development to give effect to this intention of developing non-formal distance provision

- Course development

  The provision of the equivalent of two full-time lecturers to allow secondment of academic staff to the Continuing Education Unit for periods up to six months to develop multi-mode, multi-media Continuing Education courses.

- Academic and administrative support services for the Continuing Education Unit

  The provision of a lecturer in instructional design/course development, an administrative officer and a technical officer.

- Teleconferencing

  Maintenance requirements for the extension of the distance education method using a combination of telephone and satellite linkages.

- Development of courses by newspapers

  The use of academic resources to provide courses suitable for publication by newspapers that offer access to University research and learning on topics of general interest and concern in Australia. Provision for an editor, designer, part-time temporary assistance and production costs.



- Educational broadcasting

  The provision of a radio broadcasting station capable of satellite access for educational broadcasting purposes for both degree and Continuing Education programs. The University will seek to establish a consortium with one other tertiary institution in the Brisbane Metropolitan area. The station would be financed on the basis of basic funding after establishment so that recurrent costs are fixed for the two institutions. It will be up to the station to provide the remainder of its recurrent fund.

  The objective will be to provide stereophonic transmission and satellite access.

1984

An experimental professional updating teleconference has already been completed. This pilot project linked veterinarians in small isolated Queensland communities with specialist lecturers 1000 km away in Sydney and 3000 km away in Perth via the national telephone system. Twenty-two veterinarians in eight different locations shared their experiences with each other and with their lecturers in four scheduled sessions. Each was expected to have read the precirculated lecture notes and during each session the lecturer referred each group gathered about a loudspeaking conference telephone to a common set of photographic slides. The sessions were to run for 50 minutes but each of them lasted 70-80 minutes. The evaluation by them has been most positive.

The continuing education program for the first semester (six months) contains nearly 100 courses where the total number of courses for the year was 230. Seventy of these 100 courses are to be held in smaller centres away from the metropolitan campus, one of them in Cairns. Provision has also been made in this program for guided, independent, non-credit learning packages.

The first newspaper course will be published in September October and this will be supported by print materials and a study guide for people who want to study the topic to a greater depth than that allowed by the constraints of newspaper publication. The project will be undertaken by the 'Courses by Newspaper' developed by the University of California San Diego Extension and the Volkshochschulverband of the University of Tübingen in West Germany.

The University has also registered an "expression of interest" with the Government's Department of Communications in obtaining an educational broadcasting license.

## CONCLUSION

In an editorial preface (1980) Martin H. Chamberlain wrote -

> "Adults are the primary audience of mass media, and they are the very audience continuing educators wish to reach. Thus it is strange that continuing educators have made, until recently, so little use of media in their programs and offerings. Newspapers, magazines, radio and television are convenient educational tools because adults are exposed to them regularly.
>
> It is up to the educators to exploit the media!"

The University of Queensland has set in progress a new development to capitalise on its extensive experience in distance education with formal degree courses. In giving priority to the understanding and development of the relationship between this formal provision and continuing education, its non-formal program, it has created the potential to accept the challenge implicit in Chamberlain's remarks.

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# [illegible]

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## INTRODUCTION

### Adult Education

People react differently to the term Adult Education. Some would associate it with evening studies, others remedial classes and many other things depending on one's experience. The term has acquired different meanings in different countries and different generations in the same country again have different associations. In fact adult education embraces a diversity of learning activities and has played different roles at various stages of development.

Someone with a British background would perhaps associate adult education with Worker's Education Associations, Extra-Mural Studies and evening classes of leisure-oriented subjects. Someone with an American background would perhaps relate to community colleges, university extensions, corporate and industrial training programmes). Someone with a third world background might relate it to literacy campaigns, rural development programmes and population education.

[illegible]

In terms of numbers, the student population of adult education has occasionally surpassed that of formal education and in some countries adult education is gradually extricating itself from the label of 'poor cousin' of formal education. Appointment of the head of adult education at ministerial level in government has taken place and appointments to a level equivalent to formal education are not uncommon.

Coupled with the expansion in the provision of adult education, a tremendous body of skills and knowledge has also developed. A system approach to the theory and practice of organisation and administration, involving assessment of needs and interests, definition of purpose and objectives, programme planning, instructional design, and evaluation of adult education have been evolved and are undergoing a process of sophistication akin to say management studies.

Hong Kong has also experienced phenomenal growth of adult education in terms of numbers. In common with the practice of adult education in other countries, Hong Kong has also acquired much skill and knowledge specific to the local situation as well as continual professional contact with colleagues in other parts of the world. Hong Kong can now also exhibit a diversity of provision through different institutions serving different needs and display a range of approaches, however the effort is not coordinated nor strongly supported by government.

## Distance Education

The most well-known form of distance education is correspondence study. In quite a few countries, generation of the population received their education through correspondence study e.g. Australia and Russia where the habitation has been thinly spread over vast territories. There are also numerous experiences of people who have acquired good education from the correspondence mode of study and made good. Correspondence study is fast giving way to the capacity of countries and study by correspondence remains popular in not a few countries. Nobody can deny that one can learn through correspondence.

The second medium of transmission of the printed form in correspondence study was joined later by the audio tape. Though very recently other forms of transmission systems more and more readily available in the 1980s. These 'delivery' systems in the form of television broadcast and closed-circuit), radio, cassette tape, telephone and lately computer emerged. With the increasing popularity and fascinating elements of each medium, more options are available to those who have to teach and learn at a distance. The term correspondence study is no longer sufficient to represent the many multi-media approaches adopted, and the now more common term Distance Education has been accepted in the profession.

Since the early 1970s, many Distance Learning Systems (DLS) have sprung up in various parts of the world, and dozens of Distance Teaching Universities (DTU's) have also come into being, the most well-known perhaps is the Open University of the United Kingdom. However, there exists great diversity in approaches among the institutions and new terminology like TV-led, radio-led, print-led DLS's have been invented to describe them. There also exists a range of institutions which offer no face-to-face meeting of the teacher and the learner to those which have very heavy face-to-face support.

Education observers have noted that Distance Education achieved the highest growth rate among all the different forms of study in the last decade on the global scale. Every year, there are reports of existing institutions starting distance teaching operations in one form or another and new free-standing DLS/DTU's are coming on stream very quickly. In our immediate neighbourhood, Japan has just started a DTU, Taiwan's University of the Air begins to enrol students this July, China of course has the massive TV Broadcasting University with approximately 340,000 students while Thailand began two open universities in the last three years.

A wealth of knowledge and skills have been built up about the start up and the operation of DLS/DTU's. Being often misunderstood and not taken seriously by the conventional institutions and education planners, many DTU/DLS's have gone to great lengths to have their credibility recognised with elaborate monitoring systems and extensive studies. They have been, as it were, forced into early maturity in defending themselves so that theories and practice of Distance Education are already quite established in that practically all the questions that can be raised by those with doubts about DLS may be satisfactorily answered. Of course, much more research and studies have to be made as Distance Education adopts newer technologies like computer-aided instruction but the case of distance education has been heard and demonstrated that 'it works'. The self-monitoring and self-correcting strategies and attitude adopted by most DLS, habitual by now, will strive to make distance teaching more and more effective.

## Needs Analysis

The shortage of education provision at post-secondary level for those who have finished school is well-known. In relative terms (as compared with countries within the region) and in absolute

terms, the existing provision is just not able to meet the challenge that faces Hong Kong socially or economically.

The short-fall of provision has persisted for so long now that there is an enormous backlog of population suitably qualified for further studies but not given the chance. Many of these people have gained valuable experience at the work place and if higher education is made accessible to them, no doubt they will be able to contribute a great deal more to the ever increasingly sophisticated economy of Hong Kong. Insufficient qualification has hampered their career development as well as individual actualization.

Within the existing education system, response to changing needs is slow. In some professions, shortage of suitably qualified personnel has been allowed to persist for too long even when demand for training has been evident for years. Computer studies and social work are two subjects which are exemplary of the incapacity of the system to respond in time.

For the last two decades a substantial number of students pursued university education outside Hong Kong. In practice, this self-finance and self-directed effort has made up the lack of opportunity in Hong Kong. In the early 1970s, when tuition fees were not high at overseas universities, living costs were sometimes met by part-time work and scholarships were abundant, students from lower income background took advantage of the situation and many studied abroad. In recent years, however, with escalating tuition fees, diminishing scholarship awards and restricted entry to more and more subjects in North America and Europe, the proposition of studying abroad became less viable.

A common problem encountered by commercial employment agencies and other executive recruitment firms is that many people come to them to seek help for career changes. It seems that a great number of people had gone into a profession without a clear idea of the implications of being in that profession. Mid-life career change is quite common in Western Countries and adults can easily take part-time courses of study to help them re-orient themselves. It is safe to say that a comparable need is also found in Hong Kong but the mechanism to do so through part-time study is simply not there.

Setting Analysis

Although Hong Kong is an important international financial centre and many visitors find the territory very cosmopolitan, there is an apparent lack of understanding of education development as



is understood in other parts of the world. There have been many educational exchanges with different countries but most of these have been restricted to very specific areas of education. Hence there is no overview of a comprehensive system of education and corresponding working principles. For instance, provision for identifiable target groups like the disadvantaged, out-of-school youths, the unemployed, the under-skilled, the elderly, women, new immigrants, the homebound, the remote dwellers etc. are not well developed. There is no clear idea on how the various age groups (over the whole life-span) can best be served. Special needs and problems within specific target groups are not studied and catered. The inter-relations between various types, forms and modes of education are not identified and defined. The concept of life-long education, vital to a rapidly changing society, is frequently ignored. Participation in international meetings on education have been insufficient to enable educationalists both inside and outside government to keep abreast of major developments in developed and as well as in less developed countries.

The common practice of many third world countries in linking their effort in education to the national development plans is notably missing. On the other hand, overall coherent manpower development plans and studies common to industrialised countries are also absent. Consequently, a comprehensive plan for education development has never been developed. In short, education planning and policy-making have failed to attain a level of sophistication appropriate for Hong Kong today.

Hence there is no coherent policy and plan for adult education development. The Adult Education Section of the Education Department surprisingly is still operated on the principles of remedial and second chance education solely which was the prevailing concept of adult education of the 1950s when the section was established. Observers have noted that structurally, the Education Department has hardly undergone any major change for decades even though the work of the Department has increased many fold and needs and perceptions are now considerably different. This might also explain to some extent why inflexibility is a significant feature of the existing system.

Although the brief to the government television and radio operation clearly states that education is part of their function, in fact very little educational broadcasting takes place with any substantial and systematic backing except ETV for schools. Distance education as a concept and practice is still alien to many people whose work is directly or indirectly related.

An example of failure to keep up with development is the misunderstanding over the British Open University. It has been held as an institution which Hong Kong might duplicate but was not considered feasible because Hong Kong cannot afford the necessarly large student population to make the operation viable. It is the only Distance Teaching University suggested and discussed. In fact, the British Open University has repeatedly stressed that their particular set up and approach should not be considered as the only model to be emulated if other countries intended to offer distance teaching. There are now more than a dozen DTU's spread all over the world and each of them has its own approach and characteristics appropriate to its own situation and each of them is different in the choice of media, in its operation and objectives. The British Open University should really be understood as a distance teaching university for adult and not a television university.

Without the necessary input from outside Hong Kong, without the significant participation of the non-government sector in planning and policy-making of education, it is not surprising that no comprehensive strategy for education has been developed. In particular, adult education and distance learning have also shared the same fate.

## Open Learning Systems in other countries

There are numerous kinds of distance learning institutions that exist in various parts of the world. If we restrict our attention to distance learning institutions at tertiary level, we can perhaps categorise them in the following manner.

a. Fully fledged stand-alone open university with heavy stress on broadcasting, correspondence and strong face-to-face tutoring support. The British Open University is a prime example in this category.

b. Central Broadcasting University with strong support of local institutions in terms of face-to-face teaching. The Chinese Central TV Broadcasting University with its massive enrolment and numerous local branches (making use of local adult education resources) offers university courses for full-time and part-time study.

c. Deakin University runs a dual system where part of the student population attend courses in the conventional manner and the rest attend courses through distance means.

d. In the Canadian province of British Columbia, the Open Learning Institute operates a learning network, making full use of institutions and resources already in place. Courses are offered at degree level but the Institute does not have to command huge capital investment in buildings and equipment as well as centrally retained staff.

e. In the United States, the International University Consortium allows universities to band together to form consortiums to develop distance instructional material so that costs of high quality courses can be shared.

The list goes on. It is sufficient to say that there are many ways in which distance learning may be managed and they are equally valid in their own situations, and most of them have worked. Although comparisons of the students performance of conventional and distance teaching institutions are made quite often, and each system can claim its own merits, its better and worse examples, it is evident now that while distance teaching is different, it is highly successful. With so many successful living examples it is very difficult to deny this fact.

In recent years, there is a marked trend in developed countries to make higher education more accessible. This is accompanied by the notable democratization in education, the growing belief that people have a right to higher education. Many countries are also experiencing a hike in part-time enrolment due to a variety of reasons. Consequently, a number of ways have been devised to make higher education more accessible.

In addition to the traditional evening part-time study and the London University type of external study, institutions are introducing new modes of study. Many distance teaching universities are providing opportunities for working adults with or without university entrance qualification. Substantive attendance in classes is no longer required by many institutions. Students no longer have to complete their study in a tight time-frame. Credit systems have also enabled many students to switch from full-time to part-time study and vice versa to suit their changing situations. Retraining in mid-life is also possible with these new modes of study. In general, educational institutions have shown a greater understanding of the situation of mature students and have adjusted their systems to suit them.

## Cost/Effectiveness

The cost/effectiveness of a distance teaching institution has been a topic for debate for many years and a favourite area

of inquiry for professionals engaged in distance education. On the whole the distance teaching institution has proved to be less expensive than the conventional institution. The economy of scale is a contributing factor but not the only factor. The British Open University has a rough figure of 1 to 3 on a student by student basis i.e. the cost of educating an OU student is approximately 1/3 that of a conventional university. Savings at the initial levels where there is a large population of students are offset by the high cost of teaching students at higher levels where specialisations are offered. There is also the question of completion rate. If a large percentage of students cannot complete their entire course, what they have achieved before drop out might be considered wastage. But from a sociological angle, many would argue that this is not a wastage because any additional education received by students would in the end contribute to the development and the well being of society. An overall high completion rate for the total student population say 60% and over is necessary for maintenance of credibility.

Although developmental cost for instructional materials in the form of print, radio (tape), television (video-cassette) is normally high, when spread over the number of students and over the normal life cycle (5-7 years), the cost involved is modest. How elaborate and how extensive supporting facilities and services are provided actually determines the final costs. Whatever the case may be, distance teaching has shown that it can deliver education no more expensively than conventional teaching and often much less expensively.

The very nature of quality distance teaching demands relatively high start-up costs so that good instructional materials can be readied to give relatively low recurrent expenses. In absolute terms, investment in a distance learning institution should be substantial to make the system work.

Cost, however, is not the only reason to choose distance teaching methods. Most open learning systems now in existence are usually catering for working adults. The flexibility and appropriateness of distance teaching for this target group is not matched by conventional teaching without much heavier financial commitment.

## Resources

It has often been asked what are the necessary resources and conditions required in the setting up and running of an open learning system using distance teaching methods in Hong Kong.

One of the first things that needs to be determined is whether Hong Kong has the communication infrastructure. The answer is evident in that Hong Kong has almost total television and radio coverage, total proliferation of audio cassette recorders and popular ownership or access to video cassette recorders, saturated network of telephones, data transmission facilities, one day postal service and immense popularity of inexpensive micro computers. In fact Hong Kong must be better equipped in these aspects than many other western countries. On the other hand space/accommodation poses a much bigger headache. Fortunately, distance teaching does not require a great deal of space. Still, study centres are essential because the environment in most homes is not ideal for studying in many cases.

In terms of resources, we may consider the usual three types of resources separately: human, financial and material resources.

There is a crop of people in Hong Kong who are directly or indirectly involved in distance education. There are people who run education programmes on radio and television, those who run correspondence operations in adult education and those who participate in the preparation of instructional material. There are specialists in Instructional Design, Educational Technology, Adult Education and Distance Education.

Many people have visited distance teaching institutions in other countries, some graduates of Open University (UK) are in Hong Kong. So there is a fair amount of knowledge, skills and experience available in Hong Kong. Certainly, with the injections of a small number of experienced personnel from abroad, there is enough human resource available locally to start a sizable distance teaching institution. There has also been quite a lot of experience available in adapting imported course materials.

A number of distance teaching institutions in different parts of the world offer consultancy services in the start-up process. Secondment arrangements have been made quite often in the past to help new establishments. There is no shortage of professional advice and assistance if sought.

With material resources, we are just beginning to enter an era where there are a large number of instructional materials available to newcomers. It is almost literally possible to 'shop around' and get the best material available on a given discipline. 'Ready-made, off-the-shelf' materials can be

imported directly or adapted for local use. With visual material (video), utilization of imported segments with high local production content is a real possibility. Hong Kong has many talents trained abroad and there is no good reason why imported materials may not be used 'as is' or with minor modifications. Although eventually custom courses for Hong Kong also need to be developed.

Concerning financial resources, it is obvious that any major undertaking in providing an open learning system needs government support. As with other developments, if the political commitment is there, money would not be the major obstacle.

Possible Options for Hong Kong

As we have seen from the previous discussion, Hong Kong does have the necessary conditions to establish an open learning system. The only question is what is the best option for Hong Kong.

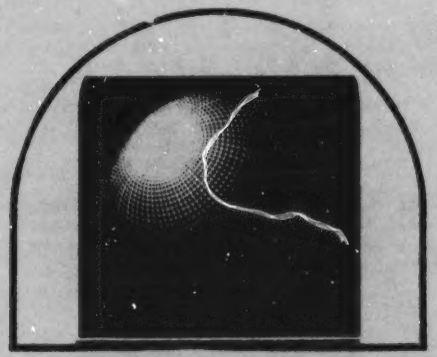
In terms of a target group, most people would agree that a tertiary institution is needed to meet the critical shortage of places at the universities and polytechnics. However, should the potential students be school-leavers or working adults? Bearing in mind that although university and polytechnic places are still scarce, there is as yet very limited publicly recognised degree courses for young adults who have valuable work experience. This group of people, who are already contributing to society in general, have a vast potential of talent which cannot be ignored. The third university for Hong Kong that is under consideration, is most likely to take school-leavers, consequently, if an open learning institution is established, it should serve the needs of the working adults.

The second question that needs to be answered is whether this institution should be free-standing or should it be attached to an existing institution. A look at the statistics for projected intake at the universities and polytechnics will reveal that these institutions are also under pressure to make provision for more students and are unlikely to have the spare capability to start a sizeable operation in distance teaching.

Should it be a 'pure' distance teaching institution? Most successful distance teaching universities offer face-to-face tutorial support and this should be followed. Experience so far suggests that conventional teaching should not be totally excluded. Assuming that a credit system is adopted, there may be some courses at higher levels which have only a limited number of students and distance methods may prove to be less economical. If the institution will take on a role of innovator at higher education, incorporation of conventional teaching alongside an education technology-intensive approach may enable this institution to meet the demand made on it by society to respond quickly to changing needs. For example, the training of computer personnel may best be served by a combination of conventional teaching and computer-based instruction which rely on learning principles closely akin to distance teaching.

Although a free-standing institution is desirable, networking of existing provisions should not be ruled out. The new institution could optimise resources by commissioning piece-meal or part-time work to existing subject experts on an individual basis; but materials so developed can also serve students of conventional institutions. The teaching of English Language is a case in point. Existing institutions use a variety of imported or self-developed material with very little audio-visual support.

As far as accreditation and recognition is concerned, experience in other countries have shown that very strict maintenance of standards are necessary. Open access and restricted exit are equally important goals for this type of institutions. Hong Kong is already moving ahead to recognise education provided by post-secondary institutions selectively. Perhaps an autonomous body should be established to accredit degree courses for this new institution and the others.



# KOREAN DISTANCE LEARNING SYSTEMS AND STRUCTURE

Professor Synghan H. Kim, Ph.D
Korea Correspondence University

As of October 1983, there are three types of distance learning institutions in the Republic of Korea; namely, 1) 48 Correspondence High Schools; 2) one Correspondence University, and 3) 3 Open Colleges of Engineering. The following gives some basic facts about these institutions. To simplify the paper work, the following abbreviations will be used:

CHS = Correspondence High School
KCU = Korea Correspondence University
OCE = Open Colleges of Engineering.

## THE CONTEXT

### The Country

The Republic of Korea is the southern half of the Korean Peninsula between mainland China and Japan. CHSs and OCEs are scattered throughout the country, while KCU, being the only institution of its kind, is in Seoul, the capital city.

With an area of 98,477 $km^2$ and a total population of slightly more than 40 million, Korea is one of the most densely populated countries in the world. The population growth rate in 1982 was 1.52 per cent. Unlike many other nations in the world, the ethnic composition of the population is very simple, since virtually all Koreans are the one race who speak one and the same language, that is, Korean.

Korea's economic growth over the past twenty years has been amazing. The country has advanced during this period, from one of the poorest nations to the threshold of joining the developed countries of the world. The nation has achieved that remarkable growth in spite of its high population density and poor natural resources. The per capita GNP in 1982 was US. $1,678.

The total length of the railroad is 6,007 km, and that of the express way is 1,225 km, which transformed the nation, in such a short period of time, into a highly mobile state that can be reached in a few hours time.



### Educational Setting

Education in Korea is heavily state-supported but there are still many privately run institutions, especially in the fields of secondary and tertiary education.

The first six years of the elementary education is free and compulsory, and the Government is planning to extend its compulsory education system to nine years by 1986.

About 96.5 percent of the primary school leavers go to a three-year middle school and about 91.2 percent of the middle school graduates continue education in high schools.

Primary and secondary education is controlled by the Provincial Boards of Education, and higher education by the Ministry of Education of the central Government.

The language of instruction is Korean, and the illiteracy rate is almost negligible.

### Historical Development of Distance Learning Institutions

Korea Correspondence University (KCU) was founded on 9 March, 1972, first as a national institution of higher learning, offering two-year courses of junior college level, through the means of broadcasting and correspondence. The courses of study at the Korea Junior College of Correspondence (KCC) thus founded, were designed specifically for those Korean men and women who for one reason or another were deprived of opportunities to attend regular, that is, four-year colleges or universities. The College was also designed to operate as an affiliate of Seoul National University. That is why the KCC has until recently been called the Korea Junior College of Correspondence, Seoul National University.

During the ten years from its foundation to March 1982, when the College was expanded and reorganized into a fully-fledged university, it earned a most outstanding reputation and prestige among the nation's educationalists as well as the entire population of the country. They came to realise more and more the great value of the College not only as an institution for higher learning for some selected students but also as a national base for lifelong education. It was in consideration of this latter function of the College that it was given university status and that it was accorded rights and privileges to operate a fully autonomous university, independent of the Seoul National University.

Korea Correspondence University, as the only university level distance teaching institution in the country, now offers five-year university courses in 11 major fields of study leading to the degrees of Bachelor of Art, Science, Education, Economics, Business Administration, Public Administration, Law, Computer Science and so on. In 1984, two more fields of study, Chinese and French languages will be introduced; and at the same time, the functions of the Institute of Distance Education will be enlarged to carry out more intensified research work in educational technology for distance education. In short, it has already grown into a university, consisting of 11 degree-awarding departments, and one department offering junior college level courses in Early Childhood Education.

Meanwhile, the first correspondence high schools were established in 1974, Seoul and Pusan, the two largest cities of the country; they are designed to operate three-year high school courses. As of March 1983, the similar CHSs in operation, number altogether 48 in 24 major cities throughout the country, with the total enrolment of 35,000.

The Open College of Engineering was established in 1981 as an institution devoted to technical education for the workers who are already in the job, under the name of Kyunggi Open College of Engineering. And similar types of Open Colleges of Engineering were established this year in Dae-jun and Pusan simultaneously. Therefore, there are now three OCEs in the country.

## INSTITUTIONAL STRUCTURE

The primary objectives of all distance learning institutions in Korea is to provide opportunities of lifelong learning for those who, for various reasons, cannot afford the ordinary public education. All the institutions endeavour to improve not only academic qualities but also the professional capabilities of those students who are already in jobs or who will be engaged in professional life. The Korea Correspondence University, being the only distance learning institution of university level in the nation, particularly aims at high standards of achievement in both instruction and research.

KCU is composed of 10 departments; namely, Home Economics, Business Administration, Public Administration, Primary School Education, Economics, Law, English Language, Agricultural Science, Computer Science and Early Childhood Education (junior college course). The University operates in close association with 49 cooperative local universities and colleges scattered throughout the country.



### Number of Students Enrolled

As of March 1983, 35,002 students were enrolled in 48 correspondence High Schools, 119,624 in KCU and 2,332 in Kyunggi Open College of Engineering.

### Qualification for Admission

There are no restrictions of nationality, age or sex in admittance to these institutions.

For CHSs, the eligibility for admission is that the applicants must be either graduates of a three year middle school course or those who have successfully completed a total of nine years course of education in foreign countries.

For KCU, the qualification for admittance is either graduation from a three year course in high school or the equivalent educational background; that is , those who finished the successive twelve years of education in foreign countries.

And finally for OCEs, those graduates of high schools who have been employed for more than one year are eligible for a junior college course and those graduates of junior colleges who have served in industrial firms for more than one year are qualified for a degree-awarding course at OCEs.

Authorities responsible for the student enrolment are vested upon the institutions themselves, while the agency responsible for determining the qualifications is the Ministry of Education.

## SOME STATISTICAL FACTS ABOUT STUDENTS

### Distribution by Sex

| Type of Institution | Total Number Students | Male | Female |
|---|---|---|---|
| CHSs | 35,002 | 33.7% | 66.3% |
| KCU | 119,624 | 67.9% | 32.1% |
| OCEs | 2,332 | (not classified) | |

Distribution by Age Groups

| | | | |
|---|---|---|---|
| CHSs | Under 18 years | 18-39 years | Over 30 years |
| | 16.4% | 18.6% | 3.0% |
| KCU | Under 21 years | 21-35 years | Over 35 years |
| | 7.2% | 76.5% | 16.3% |
| OCEs | Under 20 years | 20-35 years | Over 35 years |
| | 1.1% | 97.1% | 1.8% |

Occupations:

CHSs — Full-time students and those employed by business firms are the largest occupational groups, each with 23.6% of the total enrolment, closely followed by skilled workers at 19.5%

KCU — Major occupational groups of the KCU students are business firms at 26.2%, teachers 19.2% and full-time students 23.8%

OCEs — The main enrolment comes from manufacturing firms at 36.4%, and those from construction companies at 15.7 per cent.

RANGE OF PROGRAMMES OFFERED

CHSs offer two courses; namely, 1) the general high school course for men and women and 2) the vocational high school course in commerce.

KCU offer 10 Bachelor degree courses in Home Economics, Business Administration, Public Administration, Elementary School Education, Agricultural Science, Economics, Law, English Language and Computer Science and Statistics. The University also offers a two year junior college course in Early Childhood Education. And in 1984, two more courses of study, leading to a Bachelor degree, Chinese and French Languages, will be introduced.

COURSE STRUCTURE

CHSs. The credit structure of the CHSs is based on a three year course involving 3,528 credit hours covering 26 subjects, some of which are completed at two levels. Approximately 50% of the course is broadcast lectures, 46% is self-learning and 4% is face-to-face tutoring in classes. Students may take up to 7 years to complete the course and have to pass a comprehensive examination at the end of their course.

KCU. Bachelor degree courses of 140 credit-hours and a two year Diploma course of 80 credit-hours are available.

One credit can be obtained by taking a one-hour-per-week course for one semester and a student can register for up to 21 credits every semester. A Bachelor degree candidate can enrol for up to 10 years to finish the five year course and has to pass a final examination for the degree. But earlier graduation is possible for those exceptionally brilliant students who are entitled to register three more credits each semester. A diploma candidate can stay up to five years to complete the course.

The curriculum of KCU consists of two main categories. One is the General Studies Programme and the other is the Majors Programme.

The nature of the General Studies Programme is to promote broader understanding among students about the current streams of the academic disciplines both in humanities and natural sciences in general, so that they are ready to undertake an advanced study concerning the world, nature and man. While the Majors Programme is focused on more detailed up-to-date knowledge of twelve major fields of studies in Elementary School School Education, English, Chinese and French Language, Law, Public Administration, Economics, Business Administration, Agricultural Science, Home Economics and Computer Science and Statistics etc.

OCEs. A two year course student has to take at least 70 credits for his certificate and a degree candidate has to take an additional 70 credits, that is, 140 credits altogether. A student in a special ad hoc course is normally required to take less than 35 credits.

There is no restriction on enrolment, but a student has to pass a comprehensive examination and submit a graduation thesis to qualify for a Bachelor degree.

MEDIA AND METHODS

Lectures on air, classroom attendance and homework assignments are the three basic methods of instruction, but a self-learning on the basis of specially prepared textbooks and other reading materials is deemed to be more important than any other teaching method. In the case of Open Colleges of Engineering, facilities of industries and their affiliated research institues are also utilized in addition to broadcasting and

correspondence materials. Laboratory work and workshop practices are required for all the technical courses.

## THE TEACHING SYSTEM

### How Students are Taught

CHS. Mainly through: 1) self-learning based on textbooks and other correspondence materials; 2) lectures on radio and television broadcast through KBS (Korean Broadcasting System) network, and 3) class room attendance at weekends. (Attendance twice a month is compulsory.)

KCU. Instructions are conducted through the following 6 means: 1) Textbooks; 2) Homework Assignments; 3) Radio Lectures; 4) Correspondence Materials, including the University Bulletin; 5) Schooling, and 6) Specially prepared supplementary reference books.

OCEs. Mainly through: 1) Self-learning based on textbooks and 2) class room lectures and laboratory workshop practices.

### Print Materials

Forty-nine textbooks in 27 subjects have already been published for CHSs. As of October 1982, 139 textbooks have been published for the KCU courses and 190 more will be compiled by 1984.

### Planning and Design of Teaching Resources

Korea Educational Development Institute (KEDI) is responsible for planning and designing CHS textbooks and other teaching materials. In the case of KCU, the University has its own Textbook Planning Committee, and they are responsible for compiling and publishing all the necessary textbooks and other supplementary reading materials which have to be prepared on the basis of the curricula, formulated by the University's Curriculum Committee.

The textbooks and other teaching resources are published and distributed by the KCU Press.

### Course Production

CHSs. University professors and high school teachers are commissioned by KEDI to write textbooks, the publication of which is financed up to 50% by the Government.

KCU. Textbooks are being written almost exclusively by the faculty members of Korea Correspondence University and its Cooperating Local Universities as well as those of Seoul National University. And the sole responsibility of editing, printing and distribution of these printed media is vested upon the University Press.

## BROADCASTING

CHSs. Radio and Television Programmes are on air mainly through KBS network, but for the benefit of those students who have listening difficulties because of the regional wave blanket, two private (commercial) broadcasting networks are also utilized.

Broacasting hours for radios are: 05:00 to 06:30 and 21:00 to 24:30 every day. And the hours for TV broadcasts are: 19:00 to 20:00 and 22:00 to 23:00 every evening except on Sundays.

Production of the Radio/TV programmes are conducted by KEDI and its needed technical personnel are also trained by KEDI.

KCU. Radio broadcasts only. FM network of KBS is utilized for the purpose. The broadcasting hours are: 05:00 to 07:00; 23:00 to 01:00 on weekdays and 05:00 to 07:00; 16:00 to 17:00 and 23:00 to 01:00 on Sunday. The programme recording has been done at KBS studios with the help of the KBS technical personnel.

But the KCU is now constructing its own recording facilities within its campus.

OCEs. OCEs make use of the KCU's general education programmes on KBS radio network.

## EVALUATION OF STUDENTS' ACHIEVEMENTS

CHSs

| Types of Evaluation | Frequency | % |
|---|---|---|
| Mid-semester examination | Once every semester | 30 |
| Final examination | At the end of the course | 50 |
| Homework Assessment | At least twice every semester | 10 |
| Notebook Assessment | Five times every semester | 10 |

KCU

| Types of Evaluation | Types of Examination | % |
|---|---|---|
| Part I Examination | Computer-marking System of Yes-No basis | 60 |
| Part II Examination | Writing-Answer System on the given questions | 30 |
| Homework Assignment | Short Essay Writing on the given subjects | 10 |

OCEs

| Types of Evaluation | Frequency | Method of Evaluation |
|---|---|---|
| Occasional Evaluation | From time to time | In the course of the seminar sessions, the professors can give all kinds of exams whenever they feel it is necessary |
| Comprehensive Evaluation | End of the semester | The final examination is devised and conducted by the Evaluation Committee of each OCE. |

Besides the abovementioned examinations, each institution has its own assessment system for determining the eligibility of the candidates for the degrees, diplomas or other certificates.

Teaching/Learning Feedback Services

CHSs. During the entire period of course operation, each teacher has to answer by writing all the written inquiries and questions sent by students. The teachers are also encouraged to spare their time to help students' efforts in conducting self-learning activities through personal counselling and home visits.

KCU. At local study centres of the University, which numbers more than 49 as of October 1983, faculty members and other qualified instructors are being frequently invited to give special lecture sessions on Saturday afternoons and Sundays.



It is also the principal duties of KCU faculty to give feedback service either by writing or face-to-face answers to questions from students. As to the students' personal counselling, KCU has recently instituted its own Institute of Students' Counselling. Besides, supervisors of the student body who are in most cases the professors of the cooperating universities, can also give personal guidance on the matters of both studying and daily life of students.

OCEs. A student can solicit personal advice and help from the tutors who are assigned to each student.

# THE TELEVISION BROADCASTING UNIVERSITY OF CHINA

Tong Li
Department of Adult Education
Ministry of Education, PRC

The national TV Broadcasting University was formally established in February 1979. There has been three intakes of students so far and the total enrolment is 790,000 (360,000 full course students and 430,000 single subject students). This year, the first batch of graduates in science and technology numbered 70,000 and 140,000 students also finished their single subject studies.

## Organisation and Management

The national system of higher education by broadcasting comprises the Central TV Broadcasting University and the 28 provincial TV universities (Tibet is still without one), with over 400 local branches and 15,000 classes at the grassroot level. The Central TV University is an institution of higher learning run by the Ministry of Education and the Ministry of Broadcasting. Funding for the local TV universities is met by the local education authorities.

The role of the Central TV University is:

(i) to produce (record) and broadcast the educational programmes of the main courses;

(ii) to give guidance concerning the activities, teaching and administration of local TV universities;

(iii) to formulate all the nation-wide standardised examinations (including admission) of the TV universities, to furnish set answers to papers and marking schemes and to standardise methods of examination;

(iv) to organise the distribution of learning materials (print, audio and video tapes), and

(v) to organise the training of teaching and administrative staff.

## Joint Effort of Society

The TV university is the product of the joint effort of the Ministries of Education, Broadcasting and Postal and Telecommunication. Students of the TV university are scattered all over China, in factories, government departments and organisations. These units offer training to their staff through the TV university, they provide them with space for study, pay their fees and arrange time off work.

## Courses

(i) The Central TV University produces the main courses in the various specialties - the foundation courses and technical foundation courses.

(ii) The provincial TV universities conduct some technical foundation courses and arrange tutorials.

(iii) Classes at the grassroots run by enterprises are responsible for the training of special knowledge and skills.

Duration for each specialty is 3 years. When students completed their studies, passed their examinations and accumulated enough credits, they would have attained a qualification equivalent to university graduates.

## Target Groups

The main target groups of the TV univeristy are working adults and job-waiting youths. At present, most of the students taking courses in science and technology subjects are workers and teachers (90%), and those taking arts subjects are mainly cadres. Those engaged in full-time study account for 90% of total enrolment of full course students.

## Types of Students

(i) Those who have passed the entrance examination and formally registered as students and allocated to specific classes.

(ii) Those who have not taken the entrance examination and not formally enrolled. They can still sit the examinations and if they pass, they will also be awarded the same certificates as normal students in single subjects or for the full course.

## Modes of Study

For the full course, the mode of study is normally full-time. For those taking 2 single subjects, it is usually done on a part-time (fractional time) basis. Single subject students are considered to be doing spare time study which means that they have to spend 8 hours in studies every week.

## Benefits

If a member of staff is engaged in full-time study with the TV university, apart from production bonus and labour insurance, he/she still enjoys the full benefits of employment i.e. full pay, medical and other compensations. When they graduate, they are deemed to have equivalent qualification as university graduates and will receive equivalent pay. However, their jobs will be arranged by the enterprises which have sponsored their studies with the TV university.

Job-waiting youths bear their own tuition fees and living expenses. When they graduate, the local labour bureau will recruit them to job openings.

## Teaching Method

Teaching is conducted through a combination of TV and radio broadcasts and correspondence study.

## Evaluation

Evaluation is mostly by examination, there are very strict standards and discipline for examinations.

## Production of Programmes and their Broadcasts

The Central TV University shares its production responsibility with the provincial TV universities in a coordinate manner. The Central TV University in turn shares some of its production work with the Central TV Station in Beijing.

There are a number of ways to disseminate the programmes.

(i) Simultaneous nationwide broadcasts through the Central TV Station using microwave transmission to the various provinces, 33 hours of broadcast is scheduled per week.

(ii) Local TV stations broadcast programmes in scientific and technical subjects in courses offered by the local TV university.

(iii) Local radio stations broadcast programmes in the arts offered by the Central and local TV universities.

(iv) Video tapes are distributed to the local branches for playback on video recorders.

(v) Audio tapes are distributed to students to be played back on their own machines.

In the future, coupled with the development of space technology, there is the possibility of TV transmission by satellite. Hopefully, transmission time can be increased as a result and by that time, the quality of production should be improved and higher education by broadcasting can be further enhanced.

# THE OPEN COLLEGE OF THE UNIVERSITY OF EAST ASIA, MACAU

## The College

- A member of the Federation of Colleges that comprises UEAM
- Designed to provide distance-taught higher education opportunities for adults in employment with course-exit standards at Commonwealth University standard.

## Strategy for Curriculum Design

In the early years, to use appropriate courses prepared in other Distance Education Universities. Later to prepare our own, in English and Cantonese.

## Strategy for Teaching

To maintain whatever teaching requirements are demanded by those who prepared the course. Weekend tutorials, TV viewing etc. in Macau. Radio and tutorial cassettes provided. Students supervised by part time teachers who are monitored by full-time staff, at the College and in the originating situation.

## Strategy for Examining

Each individual course is examined or assessed by a member of the team that produced the course. The brief of the Examination Board is to maintain the same standard as in the originating situation. This is done by using the same examination format and similar, or where security permits, the same papers.

## Present Situation

The second year of students began their studies in September 1983. There are now about 2000 students. The average student registers on something less than one half of a full-time load.

The median age of students is approximately 29 years and the great majority are in clerical, secretarial, technical and professional occupations.

The major current problems are student drop out and our inability to develop full degree programmes in science and technology while teaching from Macau.

On the positive side, the first year has shown that this version of a distance education institution is well-suited to large numbers of adults in this region. Highlights in performance were achieved on the British Open University's foundation courses in Mathematics and in Science (30% and 25% distinctions) and some extremely high marks in the Business courses (two students passing the equivalent of a full-time university year).

# AN OFF-CAMPUS PROGRAMME IN MALAYSIA

Datuk Musa Mohamad
Vice Chancellor
Universiti Sains Malaysia

## BACKGROUND

Malaysia is confronted with an unprecedented demand for university education. This demand which started in the mid-sixties has continued unabated and is expected to continue through the eighties and into the nineties. The pressure of this demand is the result of three main factors:

- the explosion of aspirations among the people since the achievement of independence by Malaysia in 1957;
- the demand for high-level manpower to accelerate economic, social and political development of the country; and
- the rapid expansion of primary and secondary education which in turn exerts relentless pressure for places in tertiary institutions of learning.

Until 1969 when a new university, the University of Penang, was established on the island of Penang situated off the north-western part of Peninsular Malaysia, there was only one university, the University of Malaya, located in Kuala Lumpur. However, between 1969 and 1973 in addition to the University of Penang (renamed Universiti Sains Malaysia in 1971), three more universities were established:

- The National University
- The Agricultural University, and
- The University of Technology

In spite of the increase in the number of universities, statistics indicate that a big proportion of students, qualified to enter higher learning institutes failed to gain admission into them for lack of adequate resources.

Partly to ameliorate this situation and partly to embark on a continuing education programme, the Universiti Sains Malaysia in 1971 took the unprecedented step of providing a distance education (Off-Campus) programme leading to degree awards for adults not less than twenty-three years old (twenty-one from 1983) who for one reason or another were not able to do so under conventional systems.

The main normative aims of the programme are:

- To enhance the productivity of those who are already in employment by up-dating their knowledge and skills;
- To redress the imbalance in educational opportunities between economically favourable and less favourable areas within Malaysia;
- To meet the increasing demand for high-level manpower.

The operational objectives may be summarised as follows:

- To provide a diversified programme of studies to enable Off-Campus students to obtain a standard of academic excellence similar to that required of On-Campus students;
- To devise new approaches to teaching and learning that can overcome partially or fully the problems of distance between place of residence and employment on the one hand and place of instruction on the other;
- To organise annually a three-week residential course;
  - (a) to enable Off-Campus students to meet with one another and with the academic staff; and
  - (b) to supplement independent learning with face-to-face instruction.

Between 1971 and 1982, some 2,742 adults were offered opportunities under this programme. Of these 809 have since graduated and are currently enrolled.

In early 1981, the Ministry of Education in association with the Universiti Sains Malaysia did a review of the Off-Campus programme and came to the conclusion that the Off-Campus programme is a respectable and viable alternative route to higher education in Malaysia. Based on this conclusion the Off-Campus Unit was directed to draw up plans to expand its student intake from its current 2.4% (220 students) per academic year to a maximum of 5% (450 students) of the total (all five universities) admissions every year.

## Student Profile

In the first ten years (1971-1981), the Off-Campus Academic Programme received a total of 17,219 applicants. From these, places were offered to 2,150 students and 1,911 finally registered. Today in the 1983/84 academic session, 1,108 students are studying for an undergraduate degree through the programme. This represents approximately 25% of the total of my university's population.

The minimum age for entry into the Off-Campus programme is 23. A major factor in influencing people to follow a correspondence programme like ours is the opportunity it gives for upgrading of oneself in his/her profession. Therefore not surprisingly it is the mid-career people in their mid-twenties and early thirties who apply.

Employees in the teaching and admininistrative serves have maximum opportunities for upward mobility in their jobs. This upward movement is academic qualification dependent. Therefore not suprisingly, teachers continue to form the bulk of our clientele.

In terms of entry behaviour, most of our applicants are those with the minimum qualifications for entry into conventional university programmes in Malaysia. The country has five universities (including Universiti Sains Malaysia) and offer opportunities for study for less than 50% of all potential candidates. Therefore opportunities for higher education is very competitive and unless one has good pre-university qualifications, one stands little chance of gaining entry. However, in the off-campus programme in line with our objectives, socio-economic factors beside academic qualifications are given weightage and consequently up to 30% of applicants with minimum academic qualifications, get admitted.

About 67% of all students who registered between 1971 and 1973 have since graduated. Of these 1 (0.1%) student achieved First-Class Honours, 62 (11.0%) achieved Second Class Upper Honours and 59 (10.5%) a general or pass degree. By disciplines, the Science programme achieved a 32% success rate, the Humanities programme 79% and the Social Sciences 68%. The remarkable point about these results is the fact that the off-campus students sit for the same examinations in competition with on-campus students and generally tend to fare well.

## Learning Systems and Administration

The basic learning system of the Universiti Sains Malaysia Off-Campus Programme comprises:

- Correspondence text material
- Correspondence tuition
- Radio broadcasts
- Audio-cassettes
- Interpersonal contact (for regional tutorials and laboratory activity) during weekend, and
- A three-week annual residential school.

The Science schools use the first two and the regional weekend programme extensively whilst the non-Science use the first four.

Currently, we are producing a total of 162 courses, of which 62 are Arts/Social Science based and 100 Science/Mathematics based. Course creation, delivery and tutorial support are carried out by about 10 full time academics, 140 part-time academics and 190 part-time tutors at the Study Centres. Though employing part-times does not create too much of a problem in the running of the tutorial services, it certainly is a major area of concern in course creation and maintenance activities.

The Centre for Off-Campus Studies is under the headship of a Director, there are 2 Deputy Directors, 1 Senior Assistant Registrar and 2 Assistant Registrars. Between them, they interact with and serve about 140 academic staff in the creation, production, maintenance and management of 143 courses, 190 part-time tutors, 30 part-time laboratory technicians and students. The Director and his two Deputies are academics loaned from the various faculties to be overall managers and academic guardians of the programme whilst the rest of the senior staff are professional administrators.

## Academic and Administrative Problems

A detailed discussion of the problems encountered by the off-campus programme will necessitate another paper altogether. What I shall attempt to do in this section is to briefly highlight some major issues that have bothered the programme. These are:

- Teaching and Learning. We started with little experience on the paedogogy of distance education. Materials produced for the off-campus students were little better than standard text books, or worse. Editorial and reprographic control was non-existent and conventional academics were loath to accept or implement innovative suggestions.

To a great extent, these problems still persist, prompting one reviewer of the programme to express surprise at the relatively high success rate at examinations.

- Conflict between Off- and On-Campus Priorities: Using on-campus academics to teach and account for the teaching to "parent" faculties, though it reduces costs and provides respectability, does not help in imposing deadlines, nor does it lead to changes in teaching styles and commitment to regular and intense interaction with students. The priorities of on-campus teachers are to the immediate needs of on-campus students and not to distant off-campus students. This creates a lot of hardship for the students. The problem of good communication is so acute that serious consideration is being given by the University to creating an off-campus establishment for the maintenance of courses.

- Limited Resource: Because of the experimental nature of the programme and because of our commitment to keep costs down, the programme has at no time received more than 5% of the University's budget whilst servicing about 25% of the University's student population. This has resulted in reliance on a limited range of resources. Consequently using sophisticated media mix for teaching has not been possible though recognized as desirable. Under such circumstances, students lose interest and drop out as well as failure rates increasing. Diversifying the teaching media is now being recognized as essential and plans to develop academic staff in their usage is being pursued.

- On-Campus Regulations for Off-Campus Students: The obsession to maintain identical requirements has resulted in difficult and often insoluble administrative problems as well as confusion and hardship for students. Mandatory attendance at tutorial classes, minimum work load requirements, maximum time limits for graduations, and 'a la carte menus' instead of 'fixed menus' in choice of courses form the bulk of these problems.

What of the Future?

With five universities serving a 14 million population, with a unique socio-economic-ethnic situation and with an economy that is not doing too well, it is difficult to predict the future.





Given the demographic scene Malaysia has, it is difficult to foresee the establishment of an 'Open' University with a free for all entry. On the other hand, with a yearly build up of talented but unsuccessful aspirants to University education, it would be irresponsible (of planners) not to provide second chance opportunities for its citizens.

Given the above situation, we may have to plan for an expansion of the off-campus programme. The questions we may have to ask ourselves in this planning process would be:

- For whom are we hoping to provide these opportunities?
- Should our programmes be institution oriented or client oriented?
- If client oriented, should the off-campus go towards providing non-formal and continuing education type of programmes?
- If client oriented, should not the University look beyond its fences for course creators?

Perhaps some of you who have gone through similar dilemmas may have some answers for me.

# A COMPARATIVE STUDY OF DISTANCE TEACHING IN PAPUA NEW GUINEA AND KENYA

G.S. Kaeley
Lecturer in Mathematics
Department of Extension Studies
University of Papua New Guinea

## INTRODUCTION

The modern concept of distance education is a recent innovation, although correspondence teaching has a history of over 100 years in many countries of the world. The education system, no doubt segregated on racial grounds was well formed in Kenya, before its independence in 1963. In Papua New Guinea (PNG) the high school system has largely been developed since the early sixties, but the concept of distance education took roots in the structure earlier as compared to Kenya. The Correspondence Course Unit (CCE) was established with the aid of USAID, in the Institute of Adult Studies, University of Nairobi, Kenya in 1968. The fore-runner to the present College of External Studies (COES) in PNG commenced teaching through correspondence in 1959. However, in Kenya there existed branches of a number of British private correspondence institutions, before the establishment of CCU, whereas PNG had similar facilities at a low scale from Australian correspondence schools.

There is a small difference in the educational structure of the two countries. In Kenya the primary school is of seven years, whereas in PNG, it is of 6 years. The number of years spent in each stage of education in the two countries are shown in table 1 below.

TABLE 1

The number of years spent at different stages of schooling in Kenya & PNG.

| | Primary | Secondary | Higher secondary | University (ordinary degree) |
|---|---|---|---|---|
| Kenya | 7 | 4 | 2 | 3 |
| PNG | 6 | 4 | 2 | 4 |



Kenya, with a population of about four times that of PNG, has only one university, whereas the latter has two universities. It is realised that PNG has an oversupply of tertiary institutions as well. This makes the competition for entry into a university much stiffer in Kenya than in PNG.

## Distance Teaching at Secondary Level

The COES is the only institution in PNG offering distance teaching courses at Grade 7-10 secondary level. In addition the College offers post-grade 10 courses leading to a Commerce Certificate. There were 500 individual enrolments in 1979 and this increased to over 7500 in 1981. The latter figure is roughly equivalent to 1875 full time secondary school students.

In Keny the CCU started offering correspondence courses to adults at junior secondary level in 1968. The majority of the students for these courses were the primary school teachers, who were studying for upgrading purposes. In 1976, correspondence courses leading to the East African Certificate of Education were offered. With the change in promotion criteria for the teachers, these courses became less popular and the CCU embarked on preparing courses for professional examinations. In 1977 Accounts Clerks Stage 1 courses were offered. The development of further professional courses is under planning.

One noticeable change which the COES has experienced over recent years is in the nature of its clientele. In the past the majority of students were working adults. Many of them were, as in Kenya, primary school teachers, who were studying Grade 9 and 10 courses for promotion purposes. With the introduction of Grade 7 and Grade 8 courses recently, the mean age of the students decreased as the students who were unable to obtain high school places joined the COES. In Kenya the CCU has been offering courses mainly to the adults. Moreover the primary school leavers who could not get admission in government secondary schools, have an easy access to private and harambhee (self-help) secondary schools.

One of the other main reasons hindering the efforts of adult learners in Kenya is the method of examination. In PNG, the distance learners are allowed to enrol and sit for examination in one subject at a time. They can go on accumulating credits year after year, till they have acquired enough passes to qualify for the full certificate. This method is more suitable to the working adults, who have many other responsibilities towards their families and employment in addition to their studies. In Kenya a student has to enrol and sit for all five subjects and pass at the same time to qualify for Kenya Junior Secondary Examination (KJSE) certificate except for teachers.

The primary school teachers are allowed to accumulate credits in order to gain KJSE certificates after passing five subjects in different sittings. Therefore, the pass percentage of teachers is much higher than the other CCU students and private candidates in Kenya.

## In-service Teaching Training

As mentioned earlier both in Kenya and PNG initially teachers formed the majority of the distance learners, who were studying academic subjects for upgrading purposes. In addition Kenya had a successful multi-media teacher training programme, which was started in 1969. It was jointly undertaken by the Kenya Institute of Education (KIE) and the CCU. It was aimed at those teachers who were teaching in the primary schools, without prior professional training. It was a two year programme. The first year was used for providing them with professional training and was handled by the KIE. In the second year to raise the academic standards, the CCU taught them academic subjects through the integrated use of correspondence courses, radio lessons and short face-to-face sessions during school holidays. Over 10,000 teachers had gone through the programme by the end of 1974, when it formally came to an end.

The COES is not offering any multi-media teaching training in PNG, similar to the one described in the above paragraph in Kenya. However the Faculty of Education at the University of Papua New Guinea (UPNG) offers a variety of mix-media in-service teaching training courses in PNG. The first one is a Diploma in Educational Studies (DES) (primary) for the primary school headmasters. It is of two years duration. The candidates complete it over four semesters of distance learning and two residential Lahara (Summer) Sessions at UPNG main campus. The headmasters are trained in curriculum development, administration and planning. The second programme is DES (tertiary) for secondary school teachers, who are trained to become teacher training college lecturers. A part of the B.Ed. (in-service) courses is offered at the Lahara Sessions as well.

## Distance Teaching at University Level

The CCU is a part of the University of Nairobi, but the courses offered by it are of secondary school level and elementary professional standard. At UPNG in addition to the in-service courses conducted by the Faculty of Education for teachers, the Department of Extension Studies offers Matriculation Studies, part of the Arts degree level courses, Diploma in Industrial Relations and Law courses. Correspondence material in the semester period is supplemented by recorded cassettes and telephone teaching. Unlike Kenya's integrated three-way teaching, UPNG has its own brand of media mix. Traditionally the courses offered at Lahara Session are equivalent to one semester course taken internally. It means courses taught through correspondence in the semester time are not supplemented by face-to-face teaching at the Lahara Session. However the students attend short workshops in the province in semester time. The students complete and sit for examination for the courses studied at a distance before commencing their Lahara Session. It is actually unlike the practice followed by the majority of distance teaching institutions of the world.

Perhaps Kenya and other developing countries not offering univertisity courses through correspondence can benefit from UPNG's experience. Some parts of degree courses can be prepared and offered at a distance and supplemented by residential sessions during vacations, when the internal students are away. Some adults are unable to cope with university studies. The students who can do a part of the degree through distance learning are well-disciplined and highly motivated persons, who can be offered places to complete their programmes internally. It can minimize the wastage due to drop-out of the mature students from courses. Similarly the examining authorities in Kenya should consider allowing adult learners to sit for examination in one subject at a time as in PNG to provide them with opportunities and incentive for continuing education. In PNG in-service teacher training is conducted at Port Moresby In-Service Teacher Training College. The distance teaching methods can provide a much wider and cheaper method of in-service training of teachers without taking them out of their classes. If used properly it can assist to improve the standards of teaching Mathematics, Science and other subjects. There is a lot for PNG, Kenya and other developing countries to learn from each others experience in the field of distance teaching, which can provide a comparatively inexpensive unlimited opportunity for training and teaching to the every growing number of students.

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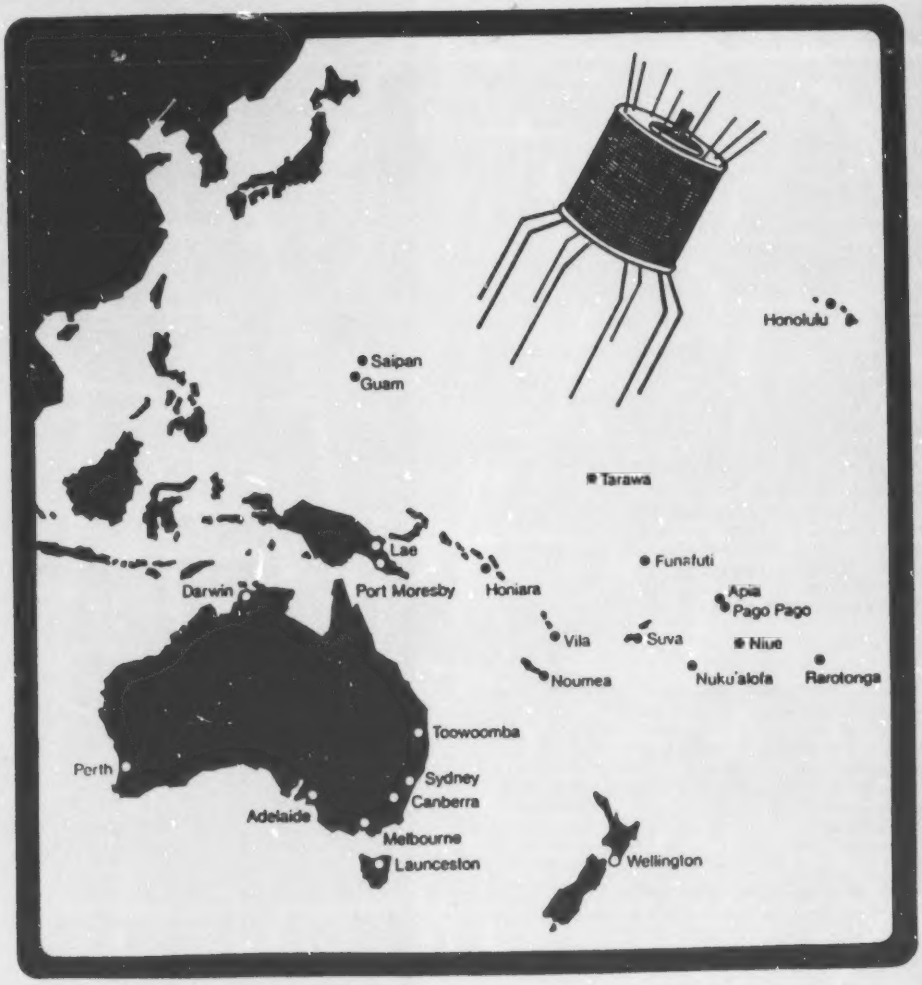



Area Covered by ATS 1 Satellite - PEACESAT

# COMMUNICATION SATELLITES AND TERTIARY EDUCATION

James C. Lange
University Extension
University of Western Australia
Nedlands, 6009 W.A.
AUSTRALIA

*Dr Lange has been brought to the University of Western Australia to look into the development of educational uses of communication satellites in the area of tertiary education. He is in the process of formulating his project and the following article is still in the drafting stage. He has kindly allowed us to publish it. We have included the short references although the full list of references is not yet available. If you have any specific enquiries about the material quoted or the project itself please write to Dr Lange at the Extension Department of the University of Western Australia.*

## 1. INTRODUCTION

This study was inspired by the use of ATS-1 and ATS-3 Satellites for international cooperation in education. NASA's ATS system is unique in the world; it is the only geo-stationary communication satellite which provides a permanently-assigned, multiple-access network (PAMA) for international delivery of education. AUSSAT, Australia's domestic satellite, will be launched in July of 1985 and we hope to help pave the way for educational use of that resource. However, the study is not limited to Australia, even though many of its examples come from that country. We are concerned with local, regional, national and international applications of new technology to improve research, teaching and administration in higher education.

Although the study was initially designed to look at the possible uses which tertiary education institutions might make of satellites, it became quickly apparent that this was too limited a scope. For example, except for providing simultaneous, distance-insensitive nation-wide coverage, there is nothing that can be done on a satellite that can't be done with copper wire and broadcasting, which have been available to educators for decades. We asked ourselves why many of the new educational techniques that are being touted for satellite communication aren't already in common use, and the answers were: ignorance, fear, apathy, and lack of encouragements. Hopefully, this document can help assuage some of these problems.



## 2. EDUCATIONAL PHILOSOPHY

The authors of this paper are committed to the widest possible educational opportunity to the widest possible range of students who are ready, willing and able to take advantage of it, and to cooperation among researchers and teachers in government, industry and educational institutions to produce and disseminate knowledge. In the growing complexity of an even more rapid technological revolution, people involved in education must hang together to produce improvements in quality and efficiencies in operation. If we do not hang together, it is likely that we will all hang separately.

### Limits to Educational Telecommunication

The major limit to growth of educational telecommunication has been poor communication. This sounds like something between a tautology and a Catch 22, and it is. There has been poor communication between the government and tertiary administration, poor communication among tertiary administrators, poor communication between administrators and academics, and poor communication in the classroom.

National policy communication

a. Rapid growth of higher education (1950-1970)
   1. US & Europe
   2. Third World
   3. Australia

b. Problems of overgrowth
   1. overproduction & underemployment
   2. tenure, age & turnover of faculty
   3. duplication & resource allocation

c. Politics of cooperation
   1. empire building
   2. bureaucratic jealousies

d. Rhetoric & finance
   1. educational fads
   2. limited-pie budgeting

Institutional communication

a. Accreditation & transfer of credit
   1. pedagogical differences
   2. intellectual jealousies
   3. job security

b. Educational consortia
   1. funding
   2. prestige
   3. threat to existing hierarchies

Educational management communication

a. Planning vacuum

b. Encouragement & inertia

c. Educational reward structures

Classroom communication

Traditionally, education has been an interpersonal, face-to-face interaction, which used the same "chalk-and-talk" process regardless of the subject matter to be learned, the student to be taught, or the instructor doing the teaching. The standard conceptualization of teaching communication patterns, has been a star-network, with the teacher in the centre of a collection of individuals and the majority of communication flowing from teacher to student. Student to teacher communication is seen as a secondary flow, primarily for question asking. Student-to-student communication is usually ignored, or at least expected to form on its own, and is thought of as serendipitous reinforcement to the main process of learning. Why this misconception has become so firmly rooted, despite the early example of the Socratic method, is a complex question with the answers based in modes of authority in the medieval church (both Christian and Muslim), in the high intellectual demands which the Socratic method places on the instructor, and in the natural human tendency to take the easy way out.

Modern Educational Directions

Regardless of the technology, there is a growing questioning of the entire educational system, in terms of -- to paraphrase the famous Laswellian model of communication -- 1) who is teaching 2) what to 3) whom, with 4) what effect. Just as research into artificial intelligence is helping us discover what intelligence is (Hofstadter, 1979), research in machine-based instruction is helping us discover what makes for effective teaching. (Pappert, 1980; McCann, 1981).

Instructor Variables: who is teaching?

The style of teaching and the personality type of the instructors has been shown to be an important issue. Matching teacher teaching styles to student learning styles, may bring greater increases in educational productivity than any other step. (Pask, 1976). Computer assisted instruction (also called computer-managed learning or computer-based instruction, as well as a number of permutations of these terms, depending on the author) allows the instructor to assign many of the repetitive rote-learning or rote-teaching tasks to machines which are more efficient at repetitive tasks and better able to individualize both practice and testing. Theoretically, this allows the teacher more time for direct, one-to-one contact with the student.

Educational Content: What is being taught?

There is a general conception (Ashby, 1974) that the rising curve of technological innovation (see, eg. Martin, 1978; Toffler, 1982) must force education to change its basic subject matter if it is to remain relevant. The arguments split as to whether this should mean more practical, job-oriented skills or more general back-to-the-basics training in reading, writing and thinking. Research has made it clear that the teaching method must change according to whether skills, facts or concepts are to be taught. (Entwhistle, 1982; Horning, 1983). But even more importantly, there is a growing recognition of wider social choices which are, or should be, available to each individual, which has created a generalized desire for more individualized, less mass-produced education. This desire comes just at the time when we are developing technology which makes such individualization easier and cheaper.

Educational Outreach: to whom?

Research has shown that education can be greatly facilitated by adapting teaching methods to the personality type of the student (Kolb, 1976). From a policy viewpoint, society is growing both in complexity and in leisure time (whether voluntary or otherwise), while at the same time demanding greater equality for all its citizens. Tertiary institutions are being asked to provide instruction to citizens from socio-economic strata with which they are unaccustomed to dealing and in settings with which they are unfamiliar. (eg. Ryan, 1983). These new demands have forced educators to confront the

problems of social, psychological and physical distance in the educational process at precisely the time that new technology has made it possible to lessen these distances considerably.

Educational Output: with what effect?

The measurements of success in education vary according to the consumer of the product. Generally, the research shows that education via technology, whether prosaic radio or exotic computer programmes, does as well as face-to-face "chalk-and-talk" in terms of student achievement on test scores, while doing a good deal better in speed and efficiency, but a bit worse in motivation, stimulation or interest and love of knowledge. However, the real measurement of educational success is a political one, based on the expectations of the observer.

The academic wants to know how the graduate produces ideas and knowledge in pressure situations (test-taking ability), the employer wants to know if the graduate can do the job s/he is hired to do (specific job skills), the graduate wants to be able to impress others and land a job (interpersonnel skills), and government, being a sum of each of these influences, is unsure what it wants. Solution of this perennial problem is beyond the scope of this paper.

Technology is the answer, what was the question?

New developments in telecommunications, specifically geo-stationary satellites, but also local networking and new telephone services from common carriers, suggest a wide range of new educational opportunities in a variety of communication modes of distance, extension and conventional-classroom instruction. However, author after author, whether from within or without the academic circles, stresses that the content and form of the message is far more important than the nature of the channel. (eg. Schramm, 1977, Albertson, 1980; the Australian College of Education, 1980; the Directors-General of Education, 1981; White, 1982). Current wisdom says that educational goals and problems should dictate the technology, rather than technology dictating educational practice. This is only partly true. In fact, the new technology is making possible modes of education which haven't been dreamed of, or rather, have been dreamed of but have been long since dismissed as impossible. As long as students, faculty, administrators and government officials are unaware of the specific potentials which information technology can bring to educational endeavour, and the economic and social benefits that we can derive from these new modes, we will continue to have education that is less than we can give at a cost that is more than we should have to pay.





## 3. PRIORITIES IN EDUCATIONAL TELECOMMUNICATIONS

Setting priorities is the first phase of cost-benefit analysis: looking for the greatest possible benefit at the lowest cost. Unfortunately, the benefits are often conflicting. One criterion for decision should be the extent of need, but this is a complex interaction rather than a single variable. For example, one aspect of the extent of need is the number served. While it is clear that there are more non-isolated students than isolated students, it does not follow that the isolated students needs are smaller, even when viewing the problem from a macroscopic perspective. For many isolated people, there will be tele-education or no education, so one aspect of the extent of need is whether there is any other way to provide the service. A second aspect is the importance of the service to be provided. Outside of extremes (should we give a starving man a newspaper or a loaf of bread) all questions of importance are value judgements. Planners may think that educational service is more important than entertainment, but people may be willing to pay a great deal more for entertainment than for education. In this regard, the political and economic clout of the users becomes the major criterion for judgements of importance.

Priorities which are based on reason may conflict with those based on tradition and power. For example, in Australia, the most obvious application for telecommunications in higher education is course delivery to the isolated student, due to the long tradition of the "pedal radio" for the outback's school-of-the-air and due to the inordinate political power wielded by the Isolated Children's Parents Association and their country supporters. But the most educationally and economically beneficial application, in both the short and long term, is the networking of students, faculty, administrators and business people to form a community of scholars.

Priority 1: Networking Knowledge

Australian experts live in a sense of isolation from the international field, and those outside of the Sydney-Melbourne axis feel themselves to be isolated from their fields within Australia. This is a critical factor in a nation where the small population (15 million) already limits the critical intellectual mass in any given field. In smaller countries, such as the Pacific Island nations, or in countries where the communication infrastructure and educational budget per capita are more limited and the temptation towards "brain drain" to the west more severe, this sense of isolation is even more critical. Conferences and journals are the current base of knowledge networking, but the first are so expensive, both in time and money, that more than one meeting per year is unusual,

and the lead times for the journals are so frightfully long that much work is out of date before it sees actual publication. Networking scholars and experts through telecommunications can stimulate productivity through cross-fertilization at a fraction of the cost of international conferences with a fraction of the lag time that is an essential and annoying part of journal-based knowledge exchange.

### Networking for research

At any given time there are a small number of issues that are considered of maximum importance in a given field. Sometimes this is due to a current social fad, but often it is a consensus on a research agenda in order to solve the next set of problems and allow the field to advance. As a result, scholars throughout the world are frequently working on the same problem, forming what Kuhn (1970) has called an "invisible college" of research. Unfortunately, many of these researchers are working not only independently, but in total ignorance of the progress of their colleagues. Some of this research is proprietary and will remain fiercely independent, but much of it is cooperative, which is one of the main reasons behind academic and industrial research conferences. Networking researchers can allow a much more integrated and systematic approach to the mutually agreed-upon agenda within a given field, and can facilitate simultaneous research in several locations, thus increasing the possibility of generalizing the results.

There are a number of world-wide, Pacific-wide and nation-wide associations which are composed of people with common research interests. Providing regular times for these organizations to plan and coordinate action will improve their value to science and to society as a whole.

### Networking for administration

The ability to communicate easily does not necessarily mean the willingness to cooperate, so the networking of administrators in tertiary education is not a panacea for the communication problems discussed above. However, there are a number of administrators who are committed to non-parochial development of higher education and a system which allowed them to meet with each other, both on a regular and on a demand-access basis, would greatly boost their effectiveness. When cooperative effort catches on, there are a number of efficiencies that are to be gained from joint planning and even from joint operations, such as data processing. This has been the impetus for the development of an ever-growing number of educational consortia.



### Networking students

One of the factors of parochialism in higher education and research is the old-boy network. Although the old school ties which a student forms are beneficial, both to the student and to society, they often limit association by setting up an us-and-them system vis-a-vis students from other schools. By networking students for joint research projects, for joint discussions of shared course topics and even for simple social chit-chat, it is possible to redefine the concept of community in terms of commonality of interest rather than in terms of geography or institutional affiliation. This has a snowballing effect, in that the more people cooperate when they are students, the more likely they will be to cooperate when they become involved in higher levels of research, public service or industry.

## Course Support

The second major need for educational telecommunication is to support traditional classroom education. Although students who are isolated by distance, health, mobility handicap, work or home situation are important, they are a small minority of the users of our educational resources. The proportion of non-residential students will continue to grow, but the students who enrol in the traditional classroom are likely to remain in the overwhelming majority until the turn of the century. New technology can improve the education for this majority dramatically by 1) increasing the diversity and quality of presenters, 2) increasing the classroom interaction with "real world" experts and situations, 3) increasing the individualized attention available for each student and 4) increasing the availability of low-cost educational software. This can be done at a fraction of the cost of improvement to distance education, using the same communication system that would be needed to support the networking concept listed as the first priority, but it will require a dramatic shift in the way education is organized and paid for.

### Lecture exchange

Most academics are one (or two or three) trick ponies. They are particularly expert in a small corner of their subject, have a good general grasp of their sub-field, and a nodding acquaintance with most of their discipline. As a result, except for the very advanced graduate courses, students get the very best for two or three lectures and mediocre coverage for the rest of the term. Using new information technology would allow for multi-lecturer courses which combined teachers from several institutions. The principal lecturer in each location would deliver 2 or 3 lectures in his or her particular specialty, and spend the rest of the course listening to the lectures of his colleagues and conducting tutorial-type post-mortems with the students.

"Visiting" experts

Communications technology can be used to bring in experts from outside the campus, whether this be from downtown, up-state or around the world. Contrary to popular belief, and to sales pitches from those pushing teleconferencing, the major deterrent to travel is not cost, but time. While it is true that few situations can justify flying an expert in from London or Lima, even fewer of the best people can afford to take the time for the trip unless they are well remunerated. A Nobel prize winner might not be able to afford a week or two flying to Sydney, Melbourne and Perth, regardless of the remuneration offered, but she might well donate an hour or two to talk to all three at once over a conference link. The same time factors constrain visits from local experts; busy government and business officials may be reluctant speakers if they are required to drive out to a campus classroom, but if they know that they can simply pick up their telephone and speak for half an hour, they are a good deal easier to convince. Similarly, a loud-speaking telephone can allow a class to eavesdrop on, even participate in, live community events being held by groups dealing with the problem under study.

Individual attention

Lecture-sharing, "visiting" experts, field trips via tele-communications and computer assisted instruction would all free the instructor for important group discussion and one-to-one interaction. Since this kind of interactive discussion is needed to reinforce information, and is where the deepest learning takes place, it requires the best minds we can muster.

Courseware exchange

The standard problem in educational technology is that the hardware that makes tele-education technically possible has far outstripped the growth of quality software which is needed to make the process educationally useful. Commercial software is expensive, and often copy-protected in such a way that makes it difficult (not to mention illegal) to modify materials to fit the local milieu. Non-commercial software, which has been produced within an educational institution to solve a particular problem is often available for the asking, but others are not aware of its existence. Telecommunication links would allow the formation of a clearing house/data base which could function as an exchange for such in-house software.

Distance education

The third priority for using new information technology is the one that is often mentioned first. It is placed last because it is the most expensive, currently serves the smallest number of students, and hence pays the least benefit to society per unit of investment. However, the students involved are, individually, just as important as the traditional (residential or commuting) students, and there is a social obligation to provide these individuals with service as close to the quality of that of the traditional student as is humanly possible. Furthermore, as the new information technology becomes more entrenched in academia, and as we discover how to use it more effectively, the difference between distance education and traditional education will blur to the extent that residential or commuting instruction will become a matter of social choice rather than academic necessity. (Carnegie Commission, 1972).

## 4. TELE-EDUCATION DELIVERY SYSTEMS

Telecommunications have been used to deliver entire courses of study in over 50 countries. This technology is long past the experimental stage, with many operational systems of over ten years standing (Schramm & Vollan, 1983). In most cases these tele-courses are supported by print materials and marked exercises which are distributed by mail. They seem to be successful in proportion to the extent to which they are integrated in a larger curriculum and are produced in close consultation with the traditional classroom teachers. (Chu & Schramm, 1967; Shulka, 1983).

One-Way Delivery

The majority of distance education delivery is two-way, but with the overwhelming amount of attention being placed on the teacher-to-student communication (information dissemination). The student-to-teacher link is generally confined to submission of assignments and to occasional questions, usually by mail. In effect, these systems become one-way systems that have limited, delayed and highly structured feedback channels. In short, they differ little from commercial broadcasting.

Direct television delivery

Over-the-air broadcast television has a long history (in fact, Alexander Bell predicted - wrongly - that this would be the major use of the movie camera he invented) and has been used widely around the world with mixed results. (Schramm, 1977). The most successful example of televised delivery of tertiary education is Britain's Open University (Perry, 1977) and the concept has also had success in the third world (eg. Bhatia, 1974), though some efforts have been failures (Schramm, 1982). A summary of the research shows that TV education has high impact, is extremely effective, is familiar and easy for students, difficult for teachers and expensive for everyone (Schramm, 1977).

### Direct radio delivery

People have been using radio broadcasts to deliver formal education since the 1920s, when it was invented. It has proven able to reach more students, in more isolated locations, with learning at least as effective as classroom instruction, at a lower cost than any other educational medium. (Jamison & McAnany, 1978).

### Direct teletex delivery

Videotext could be used as a new version of the print-based correspondence course. Given a computer and communications infrastructure, it can provide students with more individualized, more up-to-date, better illustrated material, with more feedback and at a lower cost than print-and-mail based systems. Most of the systems are still experimental, and mostly local, though some aspects of Canada's Telidon system approach formal education delivery via teletext.

### Interactive instruction

Adding a return circuit to tele-education allows interaction between student and instructor which is 1) educationally more effective, 2) more stimulating to the student and 3) more familiar to the professor than the one-way systems. Operational systems of more than 10 years standing exist in Wisconsin via land lines, in Australia via HF radio in the South Pacific via VHF satellites and in Alaska via microwave satellites.

### Video conferencing

Video teleconferencing has the capability to totally remove physical distance. In the truly professional video-conferencing set-ups, participants have been known to attempt to shake hands through the screen at the conclusion of a meeting, having momentarily forgotten that the person they have been talking with is really a thousand miles away. This technology is highly developed for business uses and industrial training in America and, to a lesser extent, for educational networking (eg. Robin, 1977) and tele-teaching (eg. Collis, 1983). Other nations, even the so-called developed ones, are not so well endowed. For example, Telecom has video-conferencing facilities in the eastern capital cities, but do not yet provide the service for most of the country. Even so, the Tasmania College of Adult Education and the University of Tasmania have conducted experiments in distance teaching using this method (Collis, 1983).



### Audio conferencing

The potential of video conferencing is nearly duplicated by audio conferencing, at a fraction of the cost. The difference between the two modes of conferencing are not nearly as great as the difference between television and radio. Audio signals can be enhanced by digital transmission of slow-scan television (one frame each 35 seconds), facsimile, electronic blackboard and data (300/1200 baud) communication. This enhancement provides more than enough visual support for most educational purposes.

### Data conference

The most inexpensive teleconferencing system eliminates both voice and video, although still allows pictures to be sent as computer code. The PLATO system is an example of a purely educational interactive system of CAI courseware. Such systems are fully established in the so-called developed countries, and are starting to be used extensively in education (eg. Jones, 1979; Drake, 1972; Moore, 1983).

Internationally accessible bulletin boards, such as EIES, connect scholars around the world, from primary school students to professional writers, to industrial research scientists. These people use their computer keyboard to join in interactive conferences which can be attended at the convenience of each individual participant (Southworth, 1983). Many people have an instinctive negative reaction to data conferencing, feeling that communication by typewriter cannot allow sufficient human touch for effective networking or teaching. However, research shows that this is simply not the case: People seem to interact with each over computer networks in very much the same way they do in face-to-face groups.

In addition to direct interaction, any network that can be used for data conferencing can also be used to access data bases and use time-sharing computers at a distance.

## 5. PRELIMINARY COST-BENEFIT ANALYSIS

Choosing among the options for tele-education delivery requires careful cost-benefit analysis to determine the maximum amount of affordable good at the minimum obtainable price. However, true cost-benefit analysis must be based on extremely specific data. Telecommunications planning involves a series of trade-offs between cost and service. Until the specific system is decided upon, the actual costs can only be vaguely guessed at, and there is no way to estimate some of the more elusive costs (such as opportunity costs) nor some of the main benefits (such as savings accruing from replacing other functions). However, a crude initial run-through, looking only at price and management costs (personnel,

production, etc.) in comparison to the quality of service received, helps to define the possible options and to suggest the parameters of their use. Much more rigorous cost-benefit analysis will be applied to specific options.

Full-motion Television

TV delivery offers the maximum impact, engaging the eyes and the ears with sight, sound & motion. The current generation of students have grown up with television, and use it constantly as both a source of entertainment and information. This has a positive effect, in that televised instruction is seen by the average student as familiar, comfortable and pleasant, but a negative effect in that television is seen as an essentially passive medium whose programs should not require any intellectual work to assimilate, and in that educational production values must meet the slick standards of the (largely American) production values of commercial TV. Many tertiary institutions primary/secondary service units have the capability of producing educational segments of a standard to compete with commercial programming, but the production costs are extremely high. Top quality educational TV instruction costs on the order of $A10,000 per hour to produce, and even amateur standard productions run high. For example, low-production-budget VCR tapes which are sent to isolated students in South Australia are costing about $A1000 per student per year (Dunnett, 1983).

In addition to the production costs, transmission costs are extremely high, whether by direct broadcast, terrestrial link or satellite. These costs, coupled with the small audience that can be expected for external studies courses (Bates, 1976) will preclude much direct television delivery of degree and diploma courses, unless there is a decision to combine external studies across large regions, in order to provide an audience with enough of a critical mass to make such a scheme worthwhile. Although Britain's Open University has had considerable success with this idea (Perry, 1977), America's nationwide-experiments have all been failures (Waters, 1983) and many regional efforts have foundered on the twin jealousy issues; comparability of courses and transferability of credit (Porter, 1982). Partly for fear of the politics these issues, partly for fear of job security and trade union action, and partly out of a desire to allow students to move back and forth between external and residential studies according to their current work and life-style situation, Australia has twice rejected this model of higher education.

However, the potential audience for non-formal (also called continuing education, extension education, life-long education, etc.) is quite attractive in conjunction with either a public or a commercial DBS broadcaster, since these agencies will not be likely to use all of the available day parts. Commercial broadcasters will see the provision of educational content as social justification which will help them get DBS licences, and even publicly funded broadcast systems might be pleased with socially positive production-free segments (programs produced by Universities and other tertiary institutions) to help fill up the broadcast day. Empty day parts (eg. overnight) on broadcast satellites might be used for networking educational producers across large regions for exchange of programmes for local rebroadcast. This kind of non-formal education will need to be nation-wide to be cost effective, and should be the result of input from tertiary, extension, secondary, and primary educators. Actual production, to be cost effective, should be the province of those institutions who already possess top-quality studios, but some cooperative formula for funding their operations will need to be developed.

Radio

Radio delivery has less impact, but at much lower dollar cost than TV. The cost of radio production, though low, is not zero, as many educational administrators seem to think. Educational radio is frequently put in a squeeze by being asked to generate a large portion of its own revenue. Raising revenue, whether through sponsorships or through soliciting donations, requires the relatively large audiences that can be gotten for popular music programmes, while educational (primarily spoken-word) programmes are designed for small, specific audiences and turn potential supporters away in droves. (see, eg. Conlon, 1979) A further cost is the necessity of training educators and producers to use radio effectively, which even most of the professionals currently do not. (Bates, 1979). A good educational radio station needs about $500,000 per year to run, and few tertiary institutions have been willing to pay this price. (Jackson, 1981).

Although the cost of direct radio delivery would be within range of a national effort in direct education, political competition among institutions with a brief in external studies makes such systems difficult to mount in countries which do not exercise massive central control of both the educational and the broadcasting systems. Thus, as with TV, nationwide radio is more suitable for non-formal education, and the lower costs will make this an extremely attractive option.

In fact, the costs are low enough to use direct radio delivery in smaller than nation-wide systems, provided that local authorities are willing to come up with the half-million dollars needed and the academic institutions are willing to encourage assign and reward faculty participation. However, in the less

centralized countries professional jealousy and empire defensiveness even at the statewide level makes the tremendous coordination effort necessary for integrated systems difficult.

Exchange of educational radio programmes might be an important part of a larger public broadcasting network system.

## 6. DESIRED NETWORK SCOPE

Once a communication mode and a delivery system have been chosen, the signal which carries the information does not care what kind of channels it travels. Assuming good quality satellites, micro-wave, radio, and land-lines can all provide the channels for any of the services discussed so far. To decide which of these channels is best for educational purposes, we must first establish which locations we want to include in our education network. These are decisions which are based on a cross between technical and policy issues.

### International Education

Many countries are beginning to realize that their educational systems are too parochial to suit the modern geo-political and economic climate, and are beginning to examine the concept of "global education" (Florida Advisory Council on Global Education, 1981). However, such efforts often result in curricula which involve home-nation academics talking about, rather than with other nations. Similarly, most developed nations recognize an obligation and a self-interest in assisting less developed nations, especially in former colonies, and a large portion of this assistance goes to education. (Carnegie Corporation, 1975). However, most of this aid tends to be one-way "help" rather than two-way exchange. Developing nations have long shown a desire to connect their university systems into the international scholastic world (Ashby, 1964), but they have been conditioned by the "brain drain" and by the failures of one-way help which they anticipated would be two-way flow, and are very wary of so-called cooperative schemes as a result.

If the resistance based on myopia and suspicion can be overcome, then the available channels -- and the way they are perceived -- start to dictate the shape of possible international educational networks.

### INTELSAT

The main vehicles for international multi-point communication are the geo-stationary communications satellites operated by INTELSAT. The INTELSAT network spans the entire globe, with compatible terminals in more nations than any other system, and is to carry the majority of the worlds international traffic by a treaty of over 100 nations, including Australia. INTELSAT has recognized a special tariff for multi-point conferencing, but few of the national common carriers who control access to INTELSAT have picked up on this move to establish a similarly reduced rate. For example, the local telecommunications company in Fiji offered to replace the ATS-1 service for the University of the South Pacific at a cost of $350,000 for 15 hours per week of 9-node international teleconferencing. INTELSAT charges ran less than $20,000 for this service. The international monopoly which INTELSAT holds shows some signs of breaking up, with the advent of Eurosat, Arabsat and the SBS commercial satellite planned by IBM. If this happens, INTELSAT may attempt to compete with the newer international satellites by becoming an international common carrier, on the strength of its already extensive network of earth stations and on the basis of the newly approved "thin-route" earth stations which are small enough and cheap enough for tiny communications users to afford. Such a move will undoubtedly be met by opposition, not the least of which will be from national "international common carriers" who will not want to see revenue loss from private access directly to the international network. Since many of these carriers (such as Australia's OTC) are government bodies, their opposition will be formidable.

### Other communication satellites

At present, the issues involved in using non-INTELSAT satellites for international telecommunications are too complex to predict the future. Until some conclusion on the future of the INTELSAT charter agreement, which is signed by some 100 nations, is reached, speculation on the possible use of other satellite systems (MARISAT, PALAPA, INSAT, etc.) is not likely to be fruitful for international education. Because of the costs involved, educational users will remain a very small portion of the international telecommunication traffic, and so must be followers rather than setters of trends.

One long-term possibility might be the inclusion of a VHF transponder, such as ATS-3's, on the frame of a future generation of satellites. Such transponders can carry 5 or 10 channels comfortably, and are relatively cheap (in the order of $A100,000), which means that a very few users would be needed to finance such a venture. Such a transponder can be operated with extremely inexpensive earth stations (about $A3000), which means that even the smallest institutions could afford to participate. This option would require reservation of the current ATS-1/3 frequencies (149/135 Mhz) for educational and experimental satellite communication at the coming World Assignment of Radio Conference (WARC 1989), and then convincing a communications satellite owner to include the transponder in a future package (INTELSAT VI, AUSSAT II, etc). Similar arguments can be made for UHF-frequency transponders on someone else's vehicle.

Non-satellite options

Short-wave (HF) radio has been around for nearly as long as the telephone in most countries of the world, and has gotten equally little use from academics as an operational system. Although it is used very successfully for telephony in the Pacific (Kingan, 1984), for direct broadcast education in Africa & South America (Jamison & McAnnany), and for interactive education in Australia (RFDS, 19??), it is held to have very unreliable reception by those unfamiliar with the technology. Reintroducing short-wave radio into academi will meet stiff and unformed resistance in the more developed nations that will need considerable effort to counter.

Cable technology is advancing extremely rapidly, with the first optical fiber cable scheduled to cross the Pacific this year. The tremendous capacity of such cables should drop the price of international telephony to a level that audio teleconferencing on a global scale becomes quite reasonable, provided the national common carriers do not inflate the charges that they levy before such cables provide enough interconnections to be more than bi-laterally useful, and the smaller and more isolated nations may never be joined to the system.

National educational networks

Each nation differs in the amount of central control in its educational system. Countries with more centralized systems have less difficulty with setting up nationwide networks as a matter of policy, though they may have more difficulty with individual teacher resistance. However, every nation faces similar technical problems, in that communication channel availability and capacity is most severely limited in the most isolated areas. As a rule of thumb, the cost of communication is a function of the number of possible paths and the percent of saturation of those paths (a simple supply and demand equation).

Hence, analysis of such systems must be nation-specific, depending on the availability of satellites, microwave links (private and common carrier), HF links (digital radio, cellular radio, CB, short-wave, etc.), land lines (private, leased and common carrier) and conventional broadcast facilities (direct and subcarrier/blanking lines). A few examples give an idea of the range of possibilities: cit

United States

a. massive capacity
b. minimal centralization

Canada

a. good central capacity, limited in isolated areas
b. medium centralization



European Example Country

a. massive capacity
b. high centralization

Third World Example Country

a. limited capacity
b. massive centralization

Australia

a. limited capacity
b. low centralization

## 7. POLICY DECISIONS FOR EDUCATIONAL COMMUNICATIONS

Communication capacity and availability decisions help to dictate the possible educational solutions in a given nation, but these technical possibilities must, in turn, be examined according to local social customs and public policy to further refine the

a. Network scope (international, national, regional or local)
b. Types of users supported (student, faculty, admin, govt.)
c. Use time ("prime time", other daytime, overnight)
d. Network ownership (Telecom, DOE/TEC, consortia, school)

These policy decisions must be based on real needs of the anticipated users, and must fit into the local status, both current and potential of:

Knowledge networking

1. Educational consortia & institutional "levels"
2. professional associations, societies & unions
3. industrial networks
4. data bases

Educational Technology in the classroom

1. awareness
2. actual use
3. production facilities

Distance education

1. institutions (number, location, relationships)
2. student (numbers, location & densities)
3. networking (needs, resources & problems)
4. curriculum (goals, methods & delivery systems)

## 8. VARIABLES FOR DETAILED COST-BENEFIT ANALYSIS

Once the social and political details of an educational system are analysed, it should be possible to develop a range of possibilities that are specific enough to obtain actual price quotations so that a detailed cost-benefit analysis can be made, based on assumptions about:

Network Architecture

1. Traffic volume (average and peak use rates)
2. Distribution (what times, on which transponders)
3. Network Architecture (how many nodes, in what hierarchy)
4. Earth Stations (what size, at what power)
5. Performance (what bandwidth, at what flux density)
6. Mode (TDMA, FDMA, Packet Broadcast?)
7. Code (analog, digital, encryption?)
8. Flexibility (pre-emptible or fixed?)

Cost of Communication

1. Capital expenditure
2. Maintenance
3. Transmission charges
4. Communication Personnel

Cost of Installation

1. Engineering
2. Training
3. Overcoming resistance/supplying incentives

Benefits

1. Cash savings (PT&T charges, salaries)
2. Cash revenue (new services, path resale)
3. Educational savings (reduced attrition)
4. Educational revenue (increased enrolment)
5. Productivity savings (personnel, data processing)
6. Quality improvement.

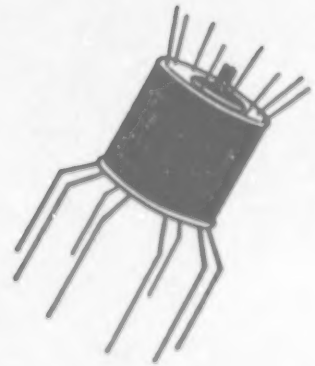
## 9. ACTION PLANS

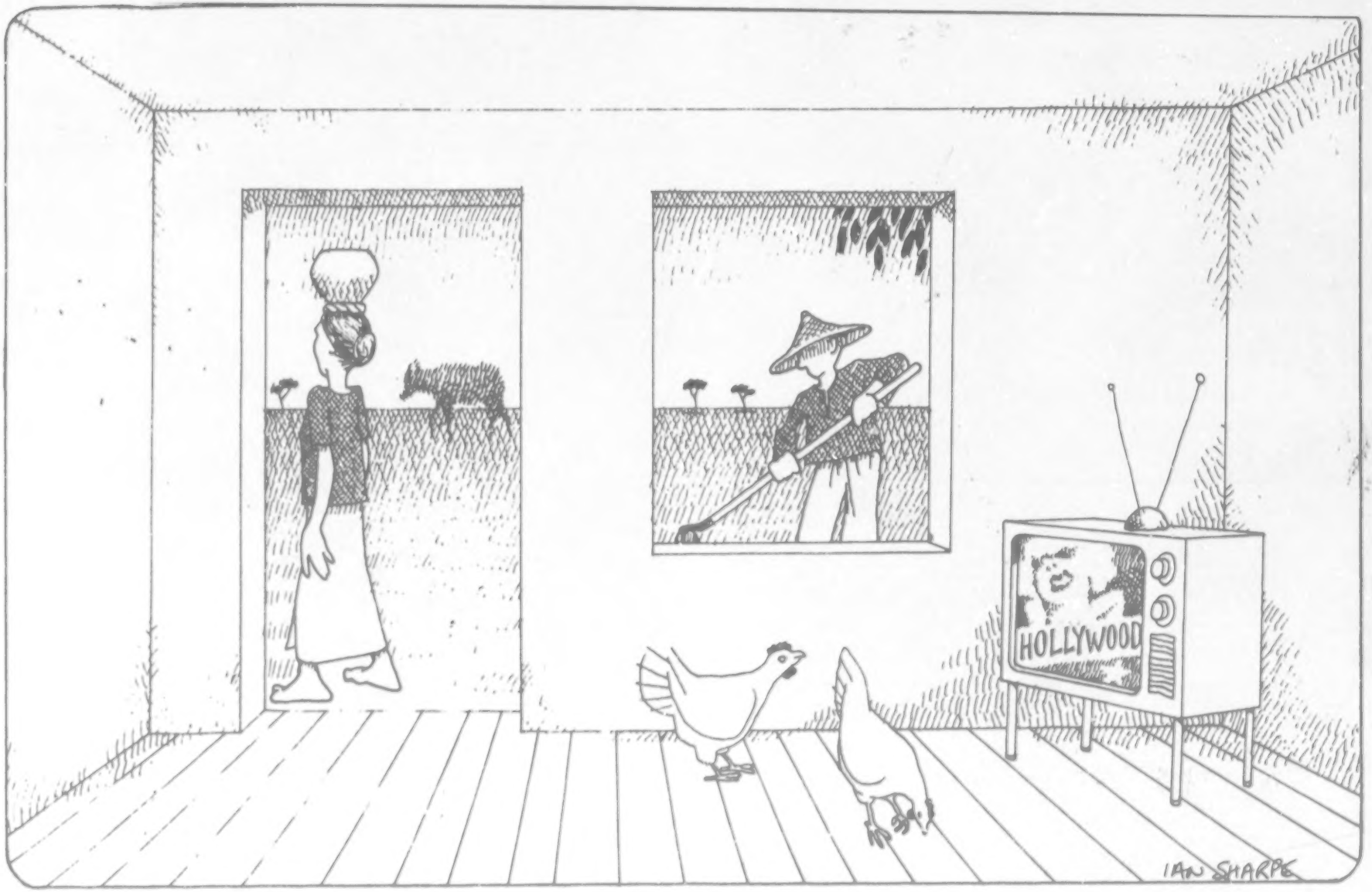
Providing that the cost benefit analysis is favourable, those interested in advancing higher education through telecommunications will have to identify specific individuals and groups as targets and develop specific arguments to convince them.

A. Users (uses that meet felt needs)
B. Tertiary heads (cost savings, improved enrolment & instruction)
C. Government Agencies (mission fit, easier coordination
D. Industry (band wagon, non-competitive, long-term revenue builder, training ground for employees)
E. Politicians (mission fit, popular support, Australia's world position)

Finally, these arguments will have to be placed on the agenda of specific individuals and groups who will form the shock troops for the campaign that will have to be waged to raise the initial investment capital that will allow practical trials in which the concept can prove itself.

A. Current telecommunication users
B. Potential users
C. Natural allies.



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